

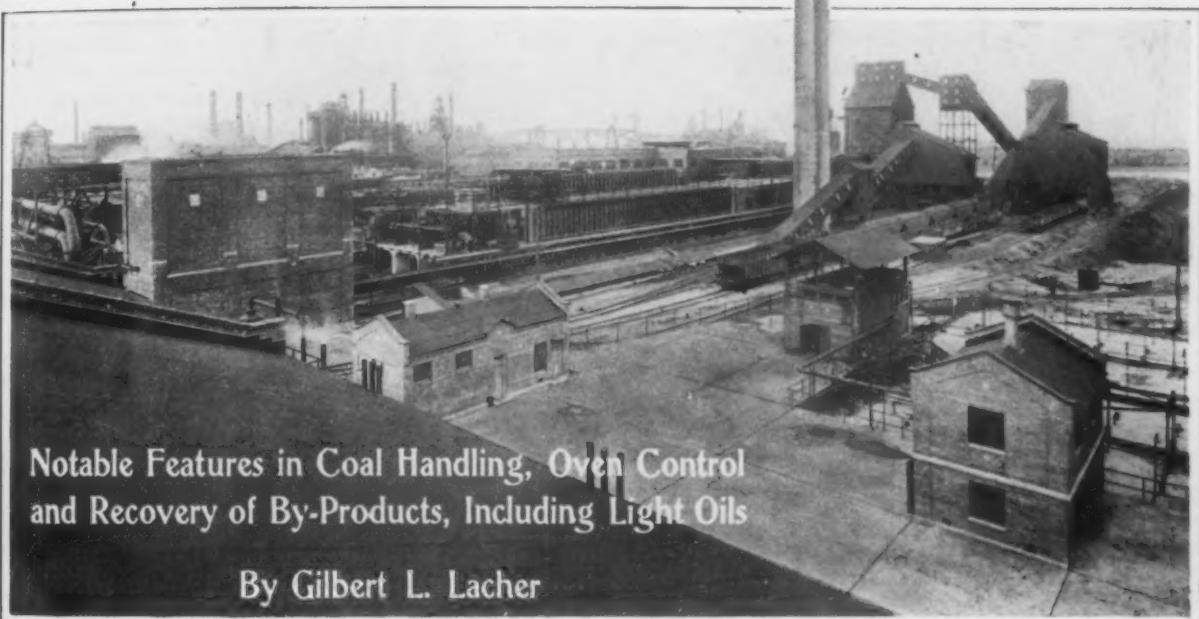
THE IRON AGE

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New Coke Plant at Wisconsin Steel Works



Notable Features in Coal Handling, Oven Control and Recovery of By-Products, Including Light Oils

By Gilbert L. Lacher

THE Wisconsin Steel Works, South Chicago, Ill., recently completed a by-product coke plant which is noteworthy for its up-to-date equipment and various features which represent departures from previous practice. The coke plant proper, consisting of two 44-oven batteries and auxiliary facilities for obtaining the by-products from the gas, was built under contract by the Wilputte Coke Oven Corporation, New York. The coal and coke handling facilities were designed and constructed by Heyl & Patterson, Inc., Pittsburgh. The first battery of ovens was fired on Nov. 13, 1919, and the second on Feb. 7, 1920. The minimum coking time of the ovens with a normal supply of coal is 14 hr. In every 24 hr. 1800 tons of coal are charged and 150 ovens are pushed. Owing to adverse transportation conditions which have interfered with deliveries of coking coal, figures regarding normal output of coke, gas and by-products are not yet available.

One of the outstanding features of the Wisconsin Steel Works plant is the arrangement for mixing the coal before it is crushed. The coal used by the company consists of 25 per cent low volatile West Virginia Pocahontas and 75 per cent high volatile Benham coal from the company's own mines in Kentucky. In a coal car unloading building the coal is either dropped into hoppers below, by means of an electrically operated traveling crane with grab bucket which removes the coal from gondola cars, or is discharged directly from hopper cars through the tracks. A pan conveyor carries the coal from

Batteries and General View of the By-Products Plant Taken from the Roof of the Boiler House, Showing Two 44-Oven Coke and Coal Handling Facilities. In the distance may be seen the blast furnaces of the Wisconsin Steel Works

the hoppers to a 36-in. belt conveyor by which it is taken to the top of the breaker building. Here it is discharged into a Bradford breaker 12 ft. in length and 9 ft. in diameter and sitting on a 19 deg. angle to permit foreign matter from the lower end. From the breaker the coal drops into three bins, each having 250 tons capacity, which feed the coal to mixing belts. From the belts the coal is dropped into a mixing hopper, whence it goes to a Williams "Jumbo" crusher with a capacity of 200 tons per hour. Mixing the coal before crushing is said to be distinctly advantageous as it gives a better mix than the older method of mechanically mixing after pulverizing. From the crusher the coal is taken by belt to the top of a larry bin with a capacity of 2000 tons, or ample to supply the ovens with coal for 24 hr. The coal is transferred by gravity from the larry bin to larry cars standing on platform scales. The cars are then moved by electric power to points of discharge over the ovens.

On the top of the ovens, as will be noted in one of the accompanying illustrations, are Smoot governors for controlling the gas pressure in the collecting mains, while to record the pressure on the mains hydrogages have been provided. The Smoot governor, manufactured by the Ratteau-Battu-Smoot Co., New York, is air operated and simpler, it is said, than electrically operated governors.

One of the novel features of the coke plant is the arrangement for automatically controlling air, gas and stack draft in a central control room, which is located between the two batteries of ovens. The

flow of gas and air to the ovens is controlled by Smoot governors, while the stack gases are regulated by a Wright-Connelly governor. A Venturi meter measures the flow of gas to the ovens and a Bacharach pressure gage indicates the gas pressure on the fuel mains. For reversing the flow of gas and air a Cutler-Hammer system is provided. Thirty-five per cent of the gas produced by the ovens is used for fuel.

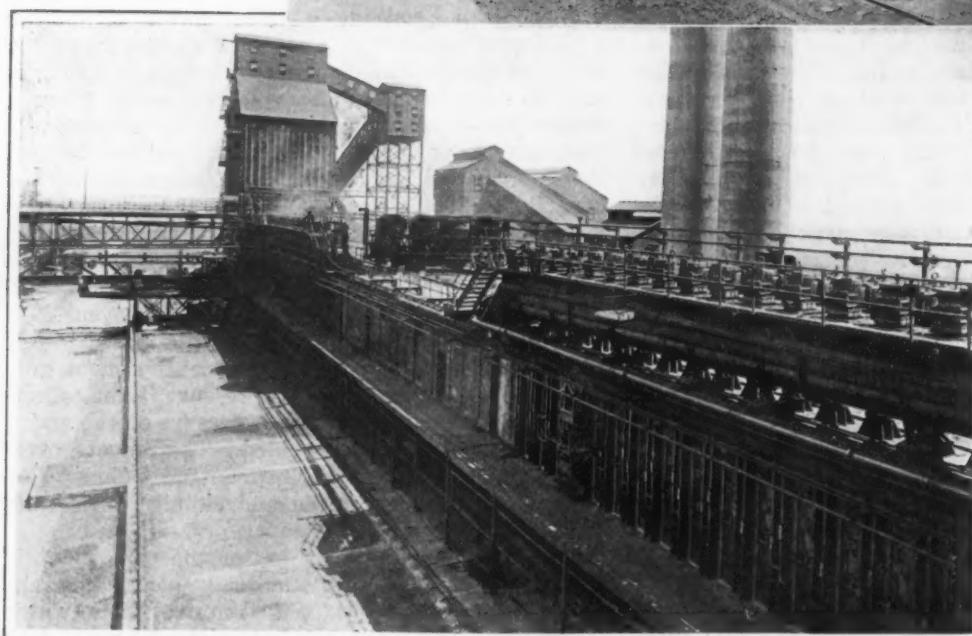
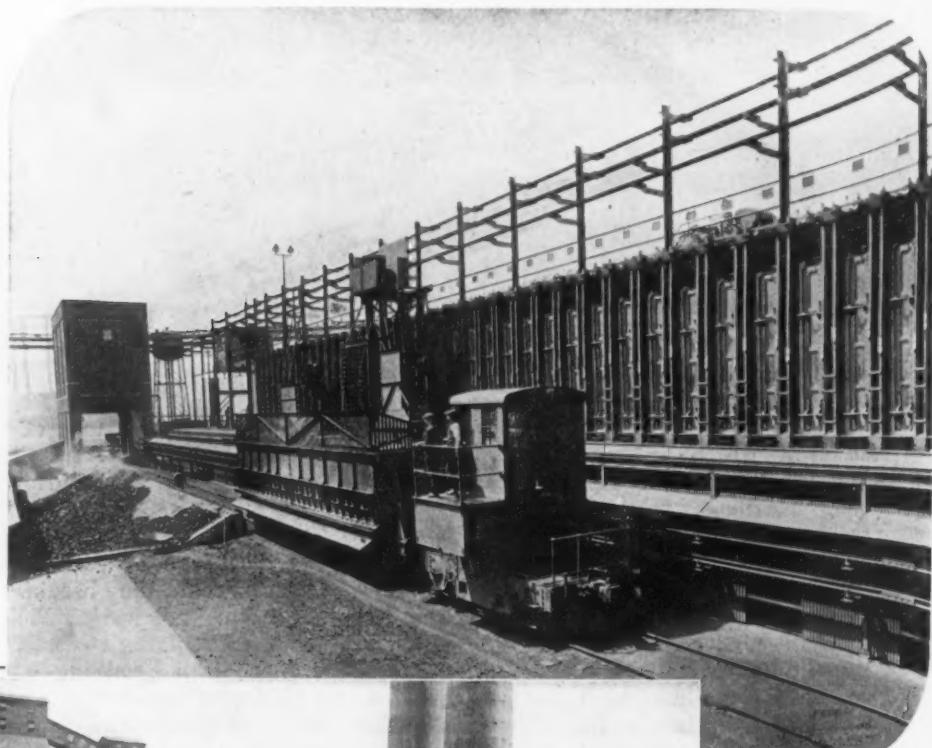
The ovens consist of two sections which operate alternately every 30 min., the idle section being heated, of course, by the gases of combustion from the active side. Each oven is 10 ft. 10 $\frac{3}{4}$ in. in height and 39 ft. in length between buckstays. On the pusher side it is 15 in. wide and on the coke side 17 in. wide. The taper in the width to the coke delivery end facilitates the clearing of the brick work when the coke is pushed out. The oven capacity is 12 $\frac{1}{4}$ tons of coal.

The plant is of the cross-regenerative type connected together longitudinally. During operation air enters the oven at the bottom, passes through the heated checker work and then joins the gas for combustion in the vertical flues. The gases of combustion pass through horizontal flues near the top

of the oven walls to the opposite half of the battery where they flow down through the flues and through the checker work to the stack flues at the bottom of the ovens which, when operations are reversed, are used for the inflowing air. Air is fed to the ovens by steam engine operated No. 8 Sirocco fans built by the American Blower Co., which are located in the fan room, below the chart room. There are three fans, one for each battery and a square which can be used on either battery.

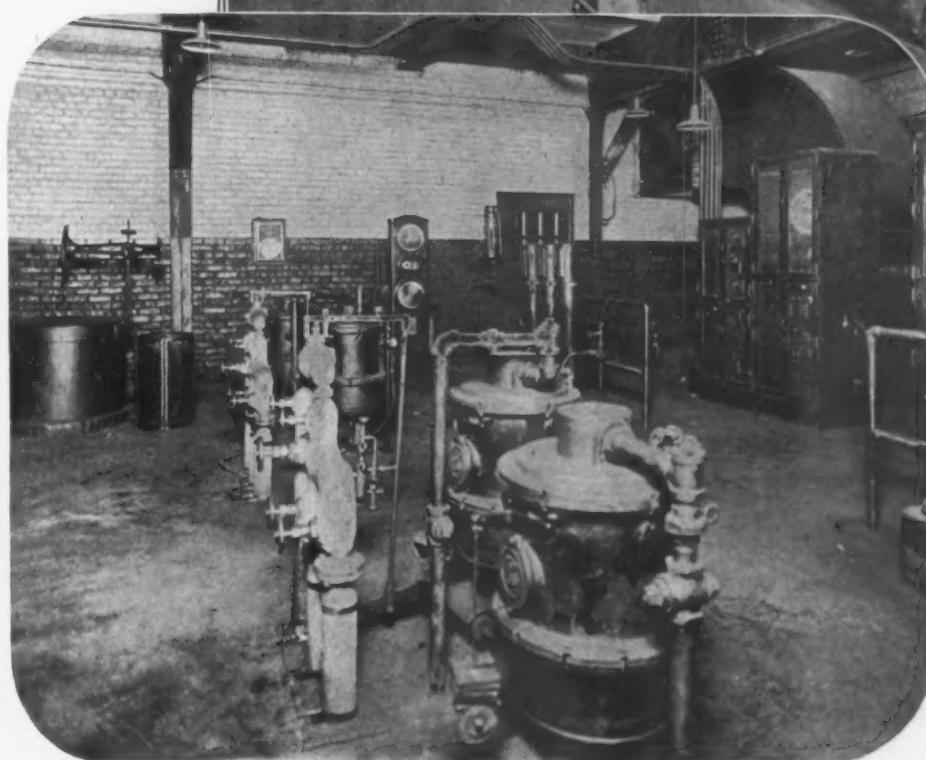
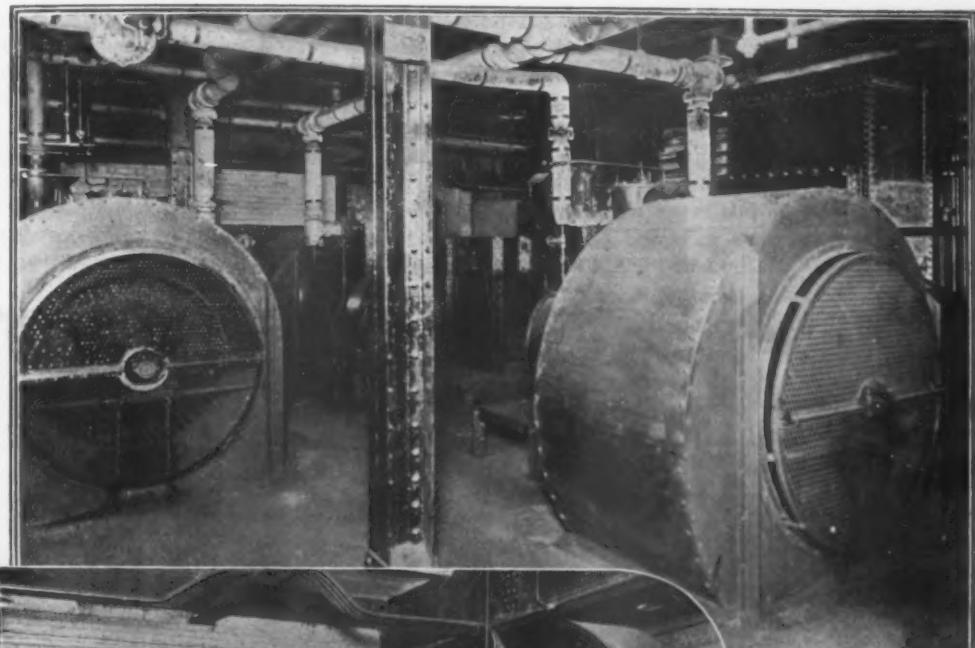
The batteries are served by two Wellman-Seaver-Morgan pushers equipped with 50-ft. rams, which operate on tracks running the length of one side of the ovens. These machines perform the combined service of pushing the coke, leveling the coal charge and extracting and closing the oven doors. On the coke delivery side of the ovens an electrically operated mud car conveys the mud used in sealing the doors before each heat, and an electrically operated combined door machine and coke rack extracts the doors and serves as a guide for the coke when it is pushed out of the ovens and delivered into the quenching car below. Both the mud car and the door machine are mounted on tracks laid on a platform which is on a level slightly lower than the floor

On the Coke Delivery Side of the Ovens an Electrically Operated Combined Door Machine and Coke Rack Extracts the Doors and Serves as a Guide for the Coke as It Is Pushed from the Ovens Into the Quenching Car Below



On the Top of the Ovens the Collecting Mains Are Equipped with Smoot Governors for Controlling the Gas Pressure, and with Hydro-gages to Record the Pressure. In the background may be seen the larry car and the larry bin

Air is Fed to the Ovens by Steam Engine Operated No. 8 Sirocco Fans. There are three fans, one for each battery and a spare which can be used on either battery. The fan room is directly under the chart room



Air, Gas and Stack Draft Are Automatically Regulated in a Central Control Room. The flow of gas and air to the ovens is controlled by Smoot governors, while the stack gases are regulated by a Wright - Connally governor

of the ovens. The quenching car, which was furnished by the Alliance Machine Co., Alliance, Ohio, is moved by a General Electric locomotive to a quenching hood designed by the Wilputte company. After quenching, the coke is delivered by gravity from the inclined floor of the car to a coke wharf. From the wharf the coke is fed by a Heyl & Patterson reciprocating feeder to a 36-in. rubber belt conveyor which carries it to a screening station, consisting of two rotary screens 21 ft. long and 6 ft. in diameter, where the coke is separated into breeze, domestic and blast furnace coke.

From the ovens the gas passes to standard type water tube primary coolers from which it is exhausted by two 74-cu. ft. Roots exhausters, driven by 150-hp. Ball engines operated by direct steam from the company's power plant. The exhausters pass the gas through P and A tar extractors to a direct recovery saturator without preheating the gas. This is a novel feature, as most other direct processes provide for preheating. Sixty-degree sulphuric acid is used in the saturators.

In the saturators the ammonium sulphate crystals are formed as the gas comes into contact with a solution of sulphuric acid. The crystals settle to

the bottom and are pumped out by an air ejector to a drain table, where the mother liquor is drained off into liquor vats or back into the saturator and the remaining salt crystals are drained into centrifugal driers of the Schaum & Eulinger type, with a capacity of 500 lb. per charge and a speed of 650 r.p.m. Each of the two saturators is served by two driers. Each drier is driven by belt from a Wachs vertical-type steam engine. From the driers the sulphate is dropped into two-wheel barrows and delivered into the sulphate storage, after weighing. The mother liquor is pumped by a steam turbine-driven centrifugal pump from the mother liquor reservoirs directly into the saturator through cracker pipe inlets.

In the sulphate storage room a motor-driven portable belt conveyor suspended from a chain block operating from a monorail is used for loading bulk shipments direct from the floor to cars on tracks adjacent to the building. The conveyor is also utilized to fill bags. As will be noted in the illustration, one end of the conveyor is placed on a stand equipped with a hopper through which the sulphate passes directly into a bagging machine. The machine is fitted with scales so that the bags may be weighed

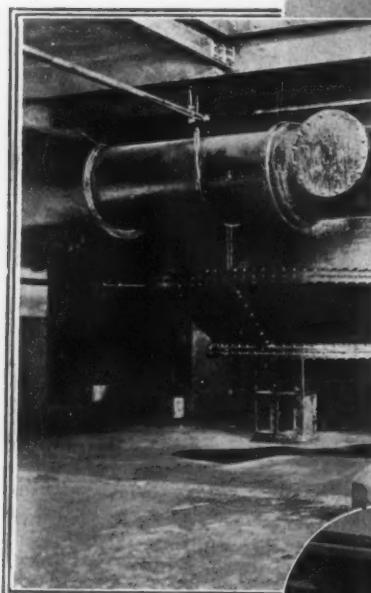
while filling. The method of handling sulphate, just described, was devised as a means of handling the salt until such a time as a traveling crane and bucket is installed.

In most coke plants the saturators and the mother liquor vats are sunk into the floor. In the Wisconsin Steel plant, however, as will be noted in the illustration, both the saturators and the two mother liquor vats are mounted above the concrete floor level. This method of construction is pointed

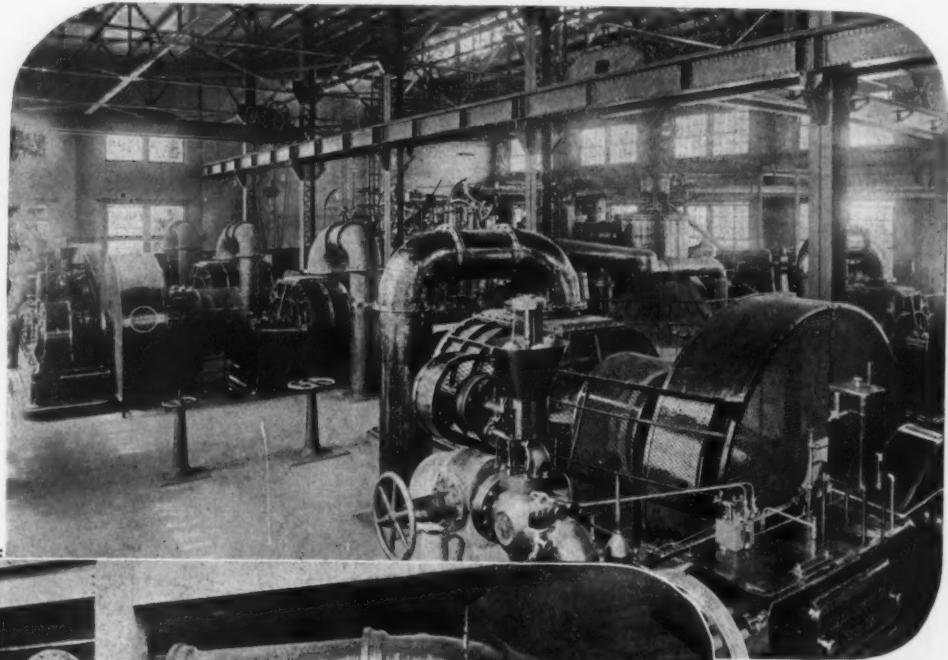
to as an improvement on previous practice as it renders it easy to discover leaks and to repair them before damage is done to the concrete foundations.

After being separated from the tar the ammonia liquor condensed from the moisture in the gas, as obtained from the primary coolers, goes to an ammonia still. Two stills have been provided, each of which has a capacity to handle the entire present output of the plant. The vapor from the still enters a header between the tar extractor and saturator and

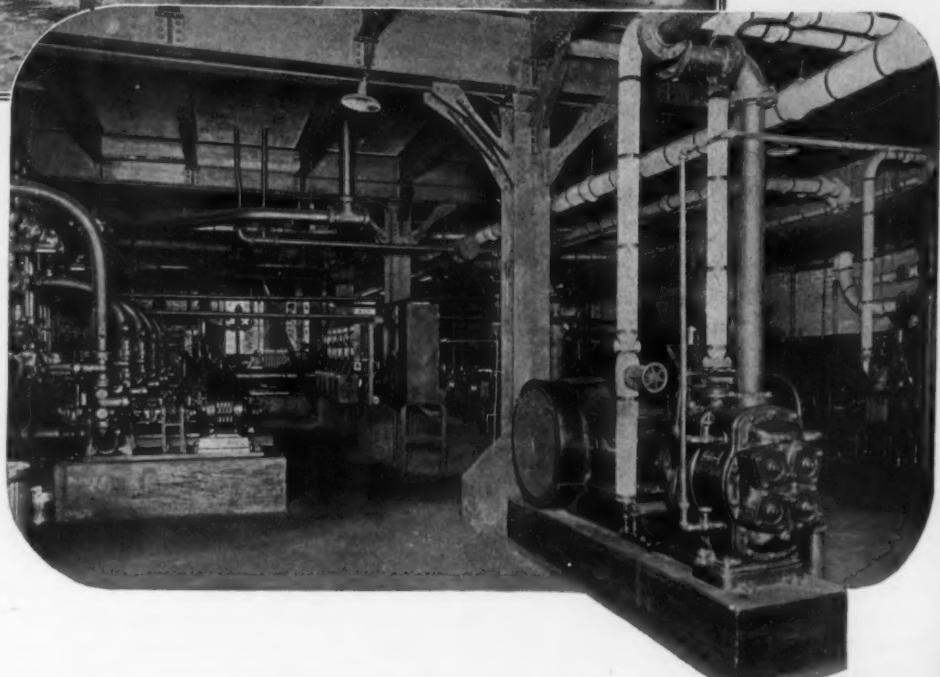
One of two 74-cu. ft. Roots Boosters (foreground), which force the surplus gas to the mills and to other points of consumption. Two of three 74-cu. ft. Roots exhausters (left background), which draw the gas from the primary coolers and pass it through P & A tar extractors to the saturator



The Pump Room is so placed that the space under the primary coolers may be utilized. This arrangement has proved advantageous because it made it unnecessary to sink the hot drain tanks and pumps in pits to receive the discharge of condensates flowing from the coolers



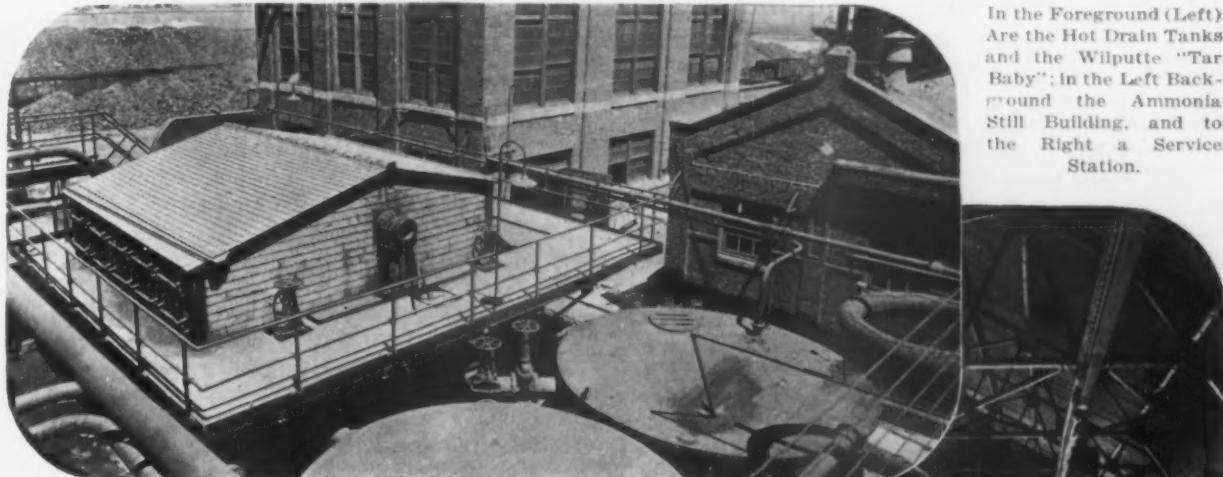
The Saturators and the Mother Liquor Vats are mounted above the concrete floor. This method of construction is an improvement on previous practice as it renders it easy to discover leaks and to repair them before damage is done to the concrete foundations



is there mixed with gas going into the saturator. The gas from the saturators passes to the final coolers, which are arranged for direct water cooling, the water coming into direct contact with the gas. The water is sprayed from the top and trickles down through wooden grids, as the gas passes up from the bottom. From the final coolers the gas goes through a series of three hurdle scrubbers, 85 ft. in height and 12 ft. in diameter, the gas entering at the bottom and the absorbing oil at the top. Here the

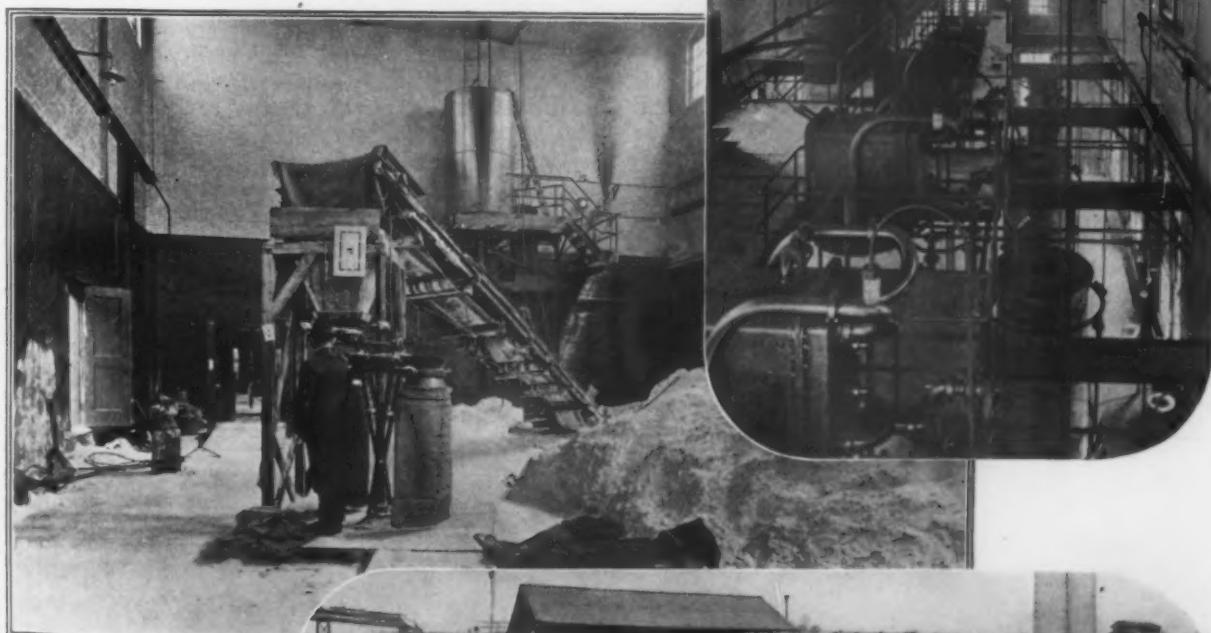
benzol products are washed out of the gas and the benzol absorbing oil mixture is pumped by Goulds direct motor-driven centrifugal pumps to the benzol plant proper.

A novel feature of this section of the Wisconsin plant is the pitch extractor, which was designed by the Wilputte company and has been nicknamed the "tar baby." The tar baby consists of a motor-driven shaft with scoop arms operating in an horizontal cylinder. The arms scoop the pitch from the bot-



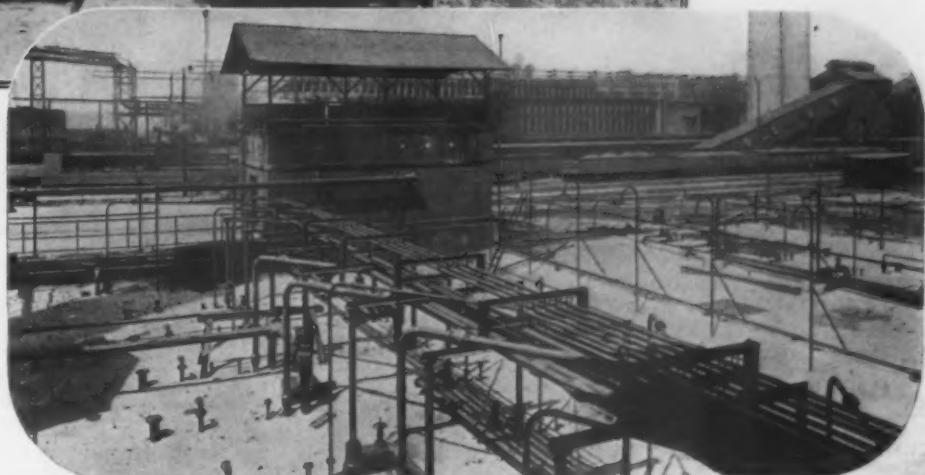
A Platform Has Been Provided (Right) in the Benzol Distilling Building which Gives Easy Access to the Dephlegmators, which Control the Temperature at the Top of the Stills. The structure houses two continuous light oil stills, a crude still and two refining stills

In the Foreground (Left) Are the Hot Drain Tanks and the Wilputte "Tar Baby"; in the Left Background the Ammonia Still Building, and to the Right a Service Station.



In the Sulphate Storage (Above) a Portable Conveyor is Used for Loading Bulk Shipments Directly from the Floor to Cars on Tracks Adjacent to the Building, and for Filling the Hoppers of a Bagging Machine

(Right) There Are Thirty-one 10,000-Gal. Storage Tanks, All of which Are Underground. In the structure just beyond the tanks are the naphthalene pans



tom of the cylinder and raise it to the level of a platform where it can be easily removed. Heretofore pitch has passed directly into hot drain tanks and workmen have been required to descend into the tanks with boots and shovel to remove the pitch, or a crane and grab bucket have been employed for the purpose.

Another desirable point of design which should not be overlooked in describing the Wisconsin plant is the location of the pump room, which utilizes the space under the primary coolers. This arrangement is advantageous because with it it was possible to place the primary coolers at a sufficient elevation so that it was unnecessary to sink the hot drain tanks in pits to receive the discharge of condensates flowing from the coolers. It will be noted in one of the accompanying illustrations that the tanks are above the yard level.

The pump room is equipped with two Chicago Pneumatic Tool Co. air compressors, an Ingersoll Rand vacuum pump, five Goulds absorbent oil pumps, one triplex Goulds tar loading pump, two Goulds hot drain pumps, two Goulds ammonia feed pumps, one Goulds tar flushing pump, and one duplex Cameron tar flushing pump. All the pumps are electrically driven, except the Cameron tar flushing pump, which is operated by steam, this being a precaution against interruptions in electrical power. The compressors are also steam driven.

In the benzol plant two continuous light oil stills separate the light oils from the benzol absorbing oil mixture. From the stills the light oils pass to underground tanks and from there into a crude still where they are fractionated into different crude products, including benzol, toluol and solvent naphtha. The residue is pumped to naphthaline pans where it is allowed to cool for naphthaline deposits. The wash oil is drained back into the absorbing oil circulation.

The crude products drained from the stills pass to the underground tanks and from there are forced by steam pumps to agitators where the oil is washed with a solution of sulphuric acid, then washed with caustic soda, and finally with water. There are two agitators of 5000 gal. capacity each. The sludge from the agitators is drained directly into cinder ladles and hauled to a cinder bank where it is burned with hot slag from the blast furnaces. After the washing and agitating processes the oil passes by gravity back to the underground tanks and

is then pumped to the refining stills where pure benzol, pure toluol, pure solvent naphtha and pure xylol are made. One of the novel features in the design of the distilling building is the fact that a floor has been provided around the dephlegmators, which control the temperature at the top of the stills. This arrangement gives the men in charge easy access to the dephlegmators. The placing of the tanks underground is also an innovation, which was necessitated by city ordinance. There are thirty-one 10,000-gal. tanks in all, covered with a top layer of sand.

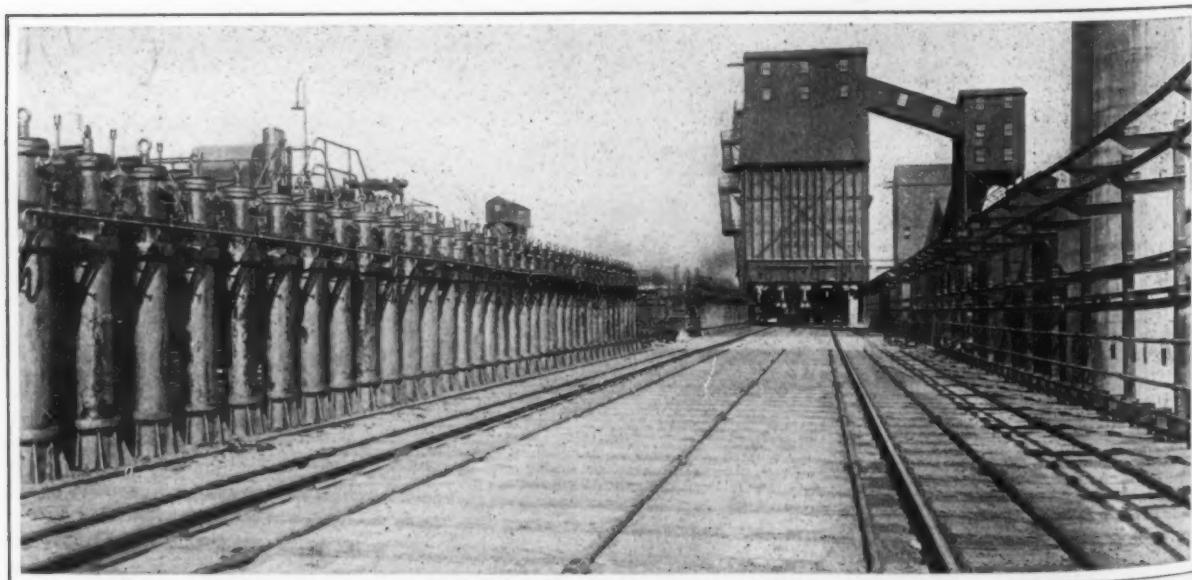
Adjacent to the tanks is a loading building, equipped with calibrated water glass gages showing the amount of oil in each tank. For each product, i.e. benzol, toluol, solvent naphtha, and xylol, separate pumps and loading reservoirs have been provided to load drums for shipment. These products are also shipped in tank cars, the cars being filled directly from the underground storage tanks.

In the boiler house serving the coke plant are three Edge Moor boilers of 500 hp. each, furnished by the Edge Moor Iron Co., Edge Moor, Del. The boilers are fired by Coxe mechanical stokers, manufactured by the Combustion Engineering Corporation, New York. The stokers burn coke breeze but the boilers are equipped with gas connections for emergency.

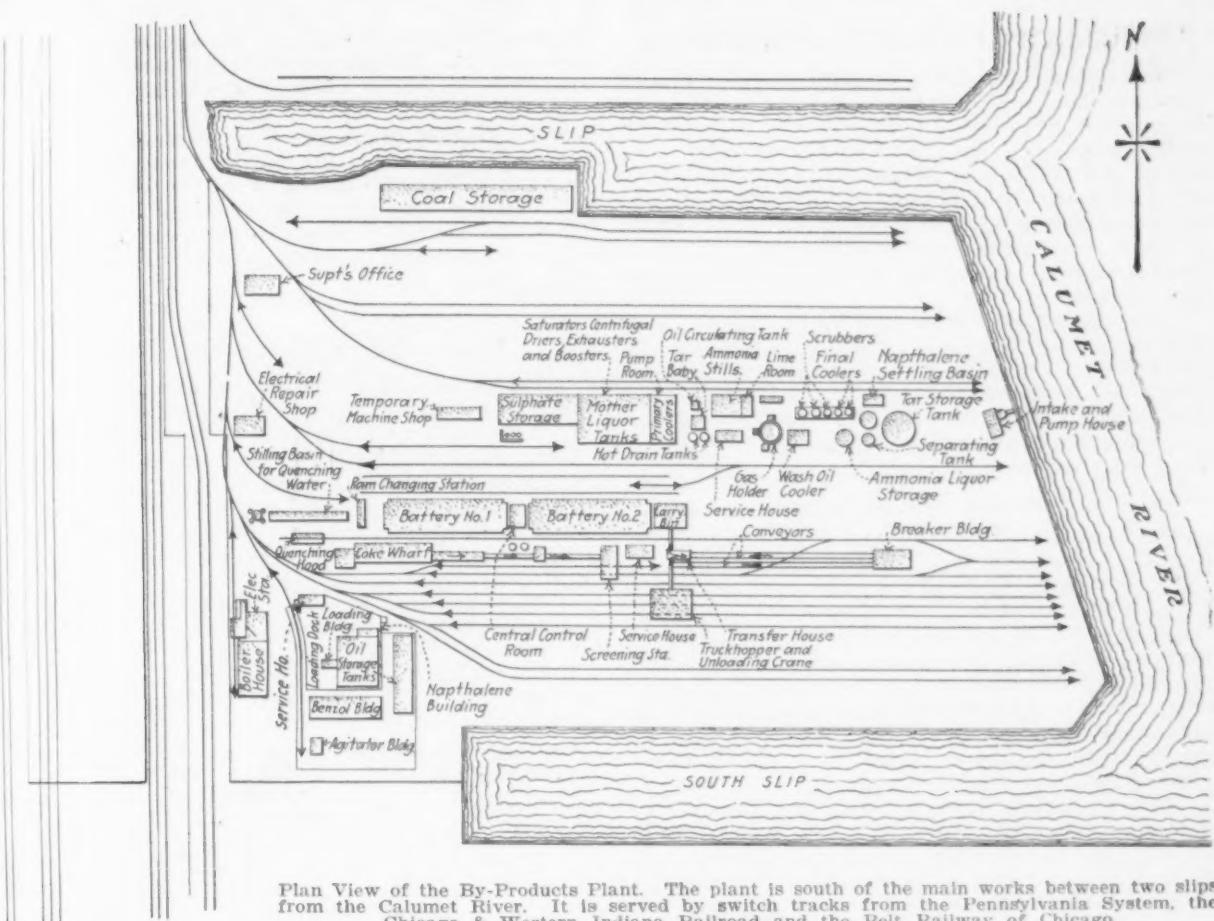
Among the facilities provided by the Wisconsin Steel Works, itself, is an intake and pump house, equipped with two centrifugal pumps, one driven by direct-connected motor and the other by a Kerr Turbine Co. steam turbine, which draw a water supply from the Calumet River and deliver it at 110 ft. head. In this connection it is worth noting that excepting the water supply and sewer pipes, there is not a pipe underground or in trenches in the entire coke plant.

The Wisconsin Steel Works also installed four service houses, each equipped with steel lockers, wash basins, toilets and shower baths. One of the two larger service stations serves the by-product section and the other the oven batteries and the coal and coke handling department. One of the smaller stations is at the benzol plant and the other at the boiler house.

Domestic coke produced by the Wisconsin plant is sold to employees and is used in gas producers at a few of the finishing mills which are not equipped to use coke oven gas. Part of the surplus gas is fur-



The Larry Car Operates by Electric Power on Tracks Running the Length of the Top of the Ovens. In the background is the larry car receiving coal from the larry bin.



Plan View of the By-Products Plant. The plant is south of the main works between two slips of the Calumet River. It is served by switch tracks from the Pennsylvania System, the Chicago & Western Indiana Railroad and the Belt Railway of Chicago

nished to the city of Chicago and the remainder is used in the heating furnaces at the company's steel mills.

Employees of the Wisconsin coke plant work in eight-hour turns six days a week, each man receiving 24 hours off weekly.

Immigration Questionnaire

John Ericson, consulting engineer, Department of Public Works, Chicago, recently made a survey among civil engineers of the country to ascertain their views in regard to a proposed move to modify our present stringent immigration laws in order to permit a more plentiful influx of the pick-and-shovel type of workers. He also made an effort to get the ideas of these men on the importation of Chinese laborers for limited periods under the supervision of a commission to be composed of representatives of the Department of Labor and of business and farming interests and under such restrictions and limitations as formulated by the commission.

This survey covering the members and associate members of the American Society of Civil Engineers has resulted in the receipt of nearly two thousand answers, the first thousand of which, classified, shows the sentiments to be as follows:

For importation of Chinese labor	608
Favorable, but not so strong for such importation	74
For immigration, exclusive of Chinese	86
For increase in labor saving machinery	10
Neutral	95
Against any importation	101
Waiting for further information	28
Total	1,002
Total for immigration	768

Composite Price Card on Pipe

The National Tube Co., instead of issuing separate sets of cards giving the net prices of oil country goods, in the various producing districts, has issued a composite card giving the prices of the different kinds of pipe in all fields. Thus, instead of distributing a card giving the price of casing, for example, in a certain district, the composite card gives the price of this grade and all

others in all zones from those carrying a freight rate of 15 1/4 c. and under per 100-lb. up to \$1.95 per 100-lb. Since oil country pipe is the only class of material sold on a delivered price basis, the new freight on other kinds of pipe are to be paid by buyers.

Hot-Rolled Strip Makers Organize

Representatives of a number of manufacturers of hot-rolled strip steel at a meeting held in Atlantic City Thursday, Aug. 19, effected a temporary organization to be known as the Hot Rolled Strip Steel Manufacturers Association. A. W. Harrison of the Superior Steel Corporation, Pittsburgh, was elected president; H. G. Naugle of the National Pressed Steel Co., Massillon, Ohio, vice-president; James Lippincott of the West Leechburg Steel Co., Pittsburgh, treasurer, and Charles M. Best, Pittsburgh, secretary. The association probably will take form along the lines of the Cold Rolled Strip Steel Manufacturers Association.

Listing Manufacturers' Surplus Stock

The Manufacturers' Steel Exchange Co., Naperville, Ill., has installed a system by means of which it is listing surplus stock of certain manufacturers and making the existence of that surplus known to other manufacturers in need of goods listed. Special printed forms have been prepared, on which can be written both surplus and stock required. Bi-monthly stock lists are being sent out.

The Railroad Administration, according to *Railway Age*, broke the record for ton-miles, but the record for the number of tons hauled still belongs to private management.

Welding Castings of Different Metals

The welding of castings of different metals and different sections was discussed by George B. Malone, Bayonne Steel Casting Co., Bayonne, N. J., before the annual meeting of the American Foundrymen's Association at Philadelphia. To be able to weld castings of different metals, he said, was one of the most important accomplishments a foundryman can possess to-day. A great many times it is possible to salvage an expensive casting by welding, which was unheard of a few years ago.

The speaker pointed out that brazing should not be employed except for minor repairs on castings. In the first place, he said, upon microscopic examination it will be noted that fine hair line cracks are easily discernible. All the time and labor that was spent in preparing the casting for brazing will be lost in a great many cases.

Preheating the Castings

The temperature to which any piece should be preheated, it was explained, depends upon the metal of which it is made, its shape, size and the purpose of the preheating. "To illustrate the difference in preheating temperatures," Mr. Malone said, "consider first a heavy piece of cast iron the shape of which should not produce any shrinkage strains when cooling and on the other hand a light complicated casting such as an automobile cylinder. In the first case it is very evident that the purpose of preheating is largely to save gas and labor and that the preheating can be carried to as high a temperature as a cherry red because there will be no danger from distortion or cracking. In the second case, the conditions are entirely different. The preheating must not be carried to so high a degree as to warp the cylinder and still it must be carried high enough to permit contraction without cracking when cooling. In this case, of course, the amount of gas saved by preheating is very small. In the first case, the temperature may vary from 1200 to 1500 deg. Fahr., while in the second case it should never exceed 800 deg. In other cases, where the style or type of cylinder is quite simple, a low temperature is sufficient." The speaker suggested that instruments be used to measure the heat such as thermocouples.

In welding hollow castings that might have small blow holes, such as water backs, radiator castings, etc., it was emphasized that great care must be taken. "It is very important," he said, "that these castings should be preheated first. There are no special instructions that can be given in these cases other than that an intelligent welder use precaution."

Large steel castings, it was explained, may be welded where wear is not a factor without preheating, but it is preferable in all cases particularly where iron or steel castings lie in a damp place or where they are subjected to intense cold, that they be brought to the welding temperature slowly. The reason for this is as soon as the welding torch is applied to a cold casting the chances for crystallization are good and not only will a poor weld result but in a great many cases the casting will be rendered unfit for use.

Welding Nonferrous Castings

In the salvaging of brass and bronze castings by welding, it was pointed out that great care must be exercised. "When it is necessary to weld," the speaker said, "first consider the casting to be welded and then endeavor to secure a welding rod of an analysis similar to the casting. You will then find very little difficulty in salvaging castings and saving a great many dollars. This is particularly true in welding brass or bronze castings which may have to be polished and will show a different color at the weld."

Monel-metal castings were explained as being no harder to weld than ordinary iron castings if the proper procedure is followed. "On account of the combination of copper with the nickel in Monel-metal," Mr. Malone said, "both must be brought to a rather high preheating temperature, say 1600 deg. Fahr., before the weld is attempted. After the casting is welded it should be brought again to approximately 1500 deg. and placed

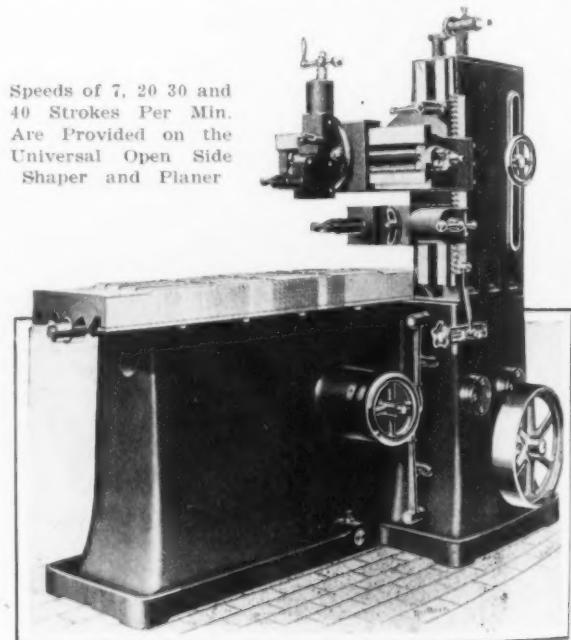
in hydrated lime in order to prevent any air getting access to it. Now this same principle applies to practically every type of casting. The average foundryman will tell you that when the weld was made the casting looked first rate, but 10 min. afterward it was all cracked. The reason for this is that proper care was not taken with the casting after the weld was made. The casting should have been allowed to cool slowly. Hydrated lime, Mr. Malone stated, was the best substance with which he was acquainted for cooling castings slowly.

Open Side Shaper and Planer

The accompanying illustration shows a new 24-in. open side shaper and planer which is now being placed on the market by the Universal Machine & Tool Co., Canton, Ohio. The column, being located on the right-hand side, makes it possible to operate the machine without going from one side to the other, accommodates large work which overhangs the table and permits the operating of the machine without work interfering with the operator.

There are four speeds controlled by levers on the operator's side of the machine giving speeds of 7, 20,

Speeds of 7, 20 30 and 40 Strokes Per Min. Are Provided on the Universal Open Side Shaper and Planer



30 and 40 strokes per min. The planer, designed with these speeds, is emphasized as providing a machine which combines accuracy with rapid production.

As its goal in the improvement of transportation service, the advisory committee of the Association of Railway Executives, of which Daniel Willard is chairman has set the following definite ends: 1, An average daily minimum movement of freight cars of not less than 30 miles per day; 2, an average loading of 30 tons per car; 3, reduction of bad order cars to a maximum of 4 per cent of total owned; 4, an early and substantial reduction in the number of locomotives now unfit for service; 5, should make more effective efforts to bring about the return of cars to the owner roads.

Marshall Furnace, Newport, Pa., is installing machinery to crush and pulverize for roofing purposes the manganese iron slag that has accumulated about the furnaces. Slag will likewise be sent from the plant of the Central Iron & Steel Co., Harrisburg, Pa., to be crushed at the Newport plant.

The Mason Machine Works Co., Taunton, textile and other machinery, has laid off indefinitely 175 machinists. This action was necessary owing to a strike of molders in progress three weeks.

Serious Labor Problems in Cleveland

Truckling to Agitators in Time of the Steel Strike Followed by Many Troubles—Practical Demonstration of Working of Shop Committees

BY GEORGE SMART

CLEVELAND, Aug. 19.—A few motor trucks were made 20 years ago, but the rapid development of the truck industry did not begin until about 1914. Since that time, various conditions have been responsible for the increased demand for this form of transportation. The World War gave tremendous impetus to the manufacturing of trucks, and it has continued in peace times to an extent that no one anticipated, either before or during the war. The transportation troubles which have continued for many months have demonstrated more clearly than anything else what can be accomplished by the use of motor trucks, and now the heavy increase in freight rates is likely to add to the popularity of the truck. While, of course, the equipment of the railroads will be gradually improved, it is believed that the motor truck as a method of delivery for fairly long distances will increase. Under the present freight rates, it is estimated that trucking can be carried on economically in competition with the railroads up to 100 miles, and it will not be surprising if under the new freight rates, trucking for even longer distances will be profitable.

In talking with Vice-President Walter C. White of the White Motor Co., Cleveland, which is manufacturing 50 motor trucks per day, I found him thoroughly optimistic as to the future of the product of his company. "It is an interesting fact," said Mr. White, "that down in New England where at present there is marked depression in cottons, leather products and woolen goods, we are farther behind in delivery of trucks than in any part of the country. The truck is in demand, whether business is prosperous or otherwise. In fact, in recent years there has been a succession of events that have contributed to the popularity of the motor truck."

White Shop Committees

The White Motor Co. is one of the most successful industries in Cleveland, and its success is due, to a very large extent, to the way it has handled the labor problem. There are numerous interesting phases of its policy, but I wish to speak only of one, that relating to shop committee. The men who control the policies of this company, Windsor T. White, president; Walter

C. White, first vice-president, and E. W. Hulet, second vice-president and production manager, believe in shop committees, but they declare very emphatically that no system will prove of value unless employees have confidence in the management and the management has confidence in the employees. While they do not express any opinion as to what policy should be adopted by other companies, they believe in a very simple system so far as their own company is concerned.

The shop committee plan of the White Motor Co. was put into operation June 1, 1915. It has, therefore, had five years of operation. It has been successful in maintaining a fine spirit among the men, and it has not resulted as some opponents of employee representation would fear, in the management of the plant being taken out of the control of the company officials. It is especially significant that at no time has the management been called upon to bargain with the men collectively for wages, hours or conditions, although these subjects have been freely and frankly discussed. Some six years ago, the company abandoned the idea that the law of supply and demand alone should govern in hiring and firing. A comparative study was made of the cost of living for many centuries and in many countries, showing the natural effects of wars, and, as a result of this study, the probable trend in America was computed. Plans were formulated for steadily increasing wage scales to keep pace with the increasing cost of living. Up to the present time, the forecast has been fully justified. In 1915, the average weekly earnings were \$15.03 for 59 hr. work, while in 1919, the average was \$31.64 for 49½ hr. The company estimates that from 1914 to 1919, the purchasing power of a dollar declined to 50 cents, hence it will be seen that the advance in wages has been more than enough to make up for the decreased purchasing power of a dollar, and the men are working 9½ hours per week less.

Shop Committee Meetings

But to return to the shop committee system. Each department is divided into groups of ten men, and a representative is elected by each group. The employees elected by the various groups in one department

Product, Wages and Turnover

The table given below presents a comparison of production values, number of employees and wages paid, from 1910 through 1919, by the White Motor Co. showing the growth of the company and the policy of a constantly increasing wage to meet the increasing cost of living.

Year	Factory Value of Product	Average No. Men	Estimate Buying Power of \$1.00	Average Earnings Based on 51 Weeks' Work	Hours' Work	Hours' Pay	Total Wages	Trucks per Man Per Year	Factory Value of Trucks Produced Per Man Per Year*
1910	\$3,836,290	1,072	....	\$14.04	60	60	\$767,496	2.290	\$3,578.63
1911	5,097,523	1,419	....	12.82	59	60 1/4	927,696	1.985	3,592.33
1912	6,739,756	1,852	....	13.53	59	61 1/2	1,278,426	1.785	3,639.17
1913	6,795,196	1,964	....	13.45	59	61 1/2	1,347,064	1.785	3,459.87
1914	9,023,172	2,202	\$1.00	15.03	59	61 1/2	1,688,467	1.924	4,097.72
1915	21,040,078	3,758	.90	16.51	54 1/2	59 1/2	3,163,857	2.460	5,598.72
1916	17,053,311	3,611	.86	17.34	54 1/2	59 1/2	3,186,921	2.082	4,722.60
1917	22,448,927	4,341	.72	20.94	54 1/2	59 1/2	4,637,105	2.040	5,171.33
1918	30,952,748	4,844	.55	27.07	54 1/2	59 1/2	6,688,051	2.720	6,389.91
1919	35,356,000	5,475	.50	31.64	49 1/2	52	8,835,000	2.751	6,456.62

*December, 1919, Estimated.

The percentage of labor turnover of the White Motor Co. has been as follows: 1915, 61; 1916, 82; 1917, 74; 1918, 62; 1919, 24.5.

form the department committee. There is one committeeman for each 10 employees. Committees are elected by secret ballot. At the meetings, which are held bi-weekly, departments separately, on company's time, all questions of interest, whether pertaining to the factory or not are freely discussed. The committee meetings are open forums. Minutes of the meetings are type-written and posted on the bulletin boards of the department locker rooms.

In looking over the minutes of a number of recent meetings, I found a wide range of subjects, including the probable effects of the war between the Bolsheviks and Poland, but most of the topics related to matters much nearer home. If, for example, a member of the committee felt that the company was selling sugar a cent higher than it could be obtained elsewhere he asked for a reason and explanation by the representative of the company and it was given. If any employee believed that he was suffering from any discomfort or injustice, he talked right out in meeting. As one reads these minutes, he can hardly fail to be convinced that

the way to prevent trouble of a serious character is to remove the cause in its incipiency. Men meeting regularly, face to face, and talking over things in this way must come to respect each other, if every man plays fair, and the sentiment of the White company is so strong in favor of the "square deal," that any man who did not play fair, would not long have influence as a committeeman or otherwise.

The policy of the company is characterized by simplicity and sincerity. Ask the company officials what they think about the claim that men can produce as much in nine hours as in 10, and they will tell you that it has been tested with "considerable success," but they do not use extravagant language about the shorter hours, the shop committees, or any other feature of the company's policy. If, however, one makes even a short visit to the plant, he is convinced that the men who manage the White Motor Co., with the constant co-operation of their employees, have done much to demonstrate what can be accomplished by following out the very simple principles of the Golden Rule.

How Cleveland Is Solving Its Problems

The labor situation in Cleveland, in spite of some bright spots, has been and still is very unsatisfactory. During the steel strike last fall, the mayor openly took the part of the strikers and caused the arrest of many men for no other reason than that they came to Cleveland to seek jobs. The courts put a stop to this high-handed proceeding after a long delay, but union labor has continued to dominate in a highly offensive manner. The plumbers have been on a strike since June 1 to enforce demands for \$12 per day and tools furnished, and have seriously interfered with building operations. They have just refused to arbitrate. The pattern makers are on a strike demanding an increase of 50c an hour, or a new rate of \$1.75 per hour, a rate much higher than that of any other city in the country.

Although there is little promise of early change for the better in labor conditions, some highly important influences are quietly at work. One of these is the determination of manufacturers to fight for the open shop as never before. The employers of the pattern makers have taken a firm stand for the open shop and plans of a much more elaborate character for fighting for it will soon be announced.

Another encouraging feature of the situation is the persistent and unostentatious effort that is being made to get employers and employees together in a more friendly way. This is being done by having meetings of small groups of employers and employees to discuss their common interests with the utmost frankness. That employers are manifesting profound interest in questions relating to labor and capital, there can be no question. A manufacturer who has been very successful in handling labor problems has been so much in demand that he found he would be compelled to give up his business if he responded to the calls made upon him by other manufacturers. "I have finally decided," he said to me, "that I will continue with my business, but I have set aside two days a month to devote to efforts to improve the relations of employers and employees. My idea is that I can render the best service by thoroughly establishing the Christian principles, in which I believe, in my own plants. If they succeed there, the effect upon many other plants will be greater than anything I could do in any other way."

A General Manager Surprised

This manufacturer believes that if employers who work with their men, treat them with the utmost confidence and tell them all there is to be known about the business, there will be no trouble. For example,

recently he was called upon to settle a controversy in regard to piece rates in a factory. The general manager at first objected to talking frankly with the men, but finally consented. A complete financial statement of the company's affairs was submitted to the men. Everything that could possibly bear upon the controversy was discussed. New rates were agreed upon and put into effect. Some weeks later, the general manager had the biggest surprise of his life when a committee of the men came to him and asked to have some of the rates reduced, saying that they were earning more than what they were entitled to. This manufacturer believes with William B. Dickson of the Midvale Steel & Ordnance Co., that, "The chief end of an industrial plant is to produce useful products in such a manner as to conserve the highest good of all of the individuals concerned in and affected by the enterprise; i.e., owners, workmen and the public." Mr. Dickson in an address at Forest Hills, L. I., last April said,

"Probably the most important truth which lies at the base of proper human relations, is that the Golden Rule is not a sickly sentimentality, a pious platitude, an invention of priesthood, a rule fitted only for women and children, and not for the market-place and factory; but, on the contrary, a stern scientific reality, the proper recognition of which is as essential to correct human relationship as any physical law is to industry."

Doubters may scoff but believers in the Golden Rule in Cleveland are exercising an influence which will be felt in the better days that are coming.

The City Club's Forum

Another encouraging feature of conditions in Cleveland is that economic questions are being fully and freely discussed, everybody being given an opportunity to express his views.

Cleveland has long been famous for the question-asking system inaugurated by the late Tom L. Johnson, and this plan is being carried on systematically under the auspices of the City Club. Meetings are held at noon in the Public Square at which a representative of the City Club presides. The speaker of the day is introduced, talks for about half an hour, and then answers questions for half an hour. The other day I heard Robert S. Binkerd, assistant to the chairman of the Associated Railway Executives of America, of New York, speak in the open-air forum of the City Club in answer to Glenn E. Plumb, who had spoken in the same place two weeks before. Mr. Binkerd made an able

speech in opposition to the Plumb plan, which was listened to most attentively by a large audience. Then came the questions. Anyone was allowed to ask a question, which was repeated by the chairman and then answered by the speaker of the day. Some questioners were inclined to be unpleasant, but most of the questioning was done in an intelligent and good natured

manner, indicating that the authors had been reading and thinking. If anyone doubts that there is live interest in economic questions in Cleveland, it will be well for him to attend one of the meetings in the square. Certain it is that unless a man is thoroughly informed and has some gift in repartee, he had better not attempt to speak in the City Club forum.

Coal Wage Settlement in Sight

CHICAGO, Aug. 21.—Notwithstanding the failure of the joint scale committee of the coal operators and miners to come to an agreement in Cleveland this week, it is believed that individual State settlements will be reached and a recurrence of the strike in the bituminous fields averted. The adjournment of the Cleveland meeting had the immediate effect of closing the western Kentucky and the Indiana mines and a few of the Illinois mines. On Monday, however, Illinois operators and miners will meet, and it is believed that an agreement will be reached.

In the central and southern portions of Illinois where 85 per cent of the tonnage is produced, the wages of the "day" men are not in proper relation to those of the "tonnage" men. In the northern part of Illinois, where the veins are thin, the wages of the day and tonnage men are now about the same. Owing to the practice of making agreements of general application, an increase in pay for the day men will make their pay greater than that of the unloaders in northern Illinois, and thereby inevitably cause the latter also to demand an increase. Owing to this difficulty it is feared that the new agreement, if signed as a result of deliberations next week, will prove only a temporary peace.

Steel Strike Leader in Seattle

SEATTLE, WASH., Aug. 16.—William Z. Foster, syndicalist and secretary of the general committee on the steel strike of last year, has entered the lecture field in the far West. THE IRON AGE representative learns that Foster is to lecture at a labor picnic here on Sunday, Aug. 27. In many public places and across some of the main streets are large posters announcing Foster's coming to tell of lessons from the great steel strike. Foster has a new job. He is now circulation manager of the *New Majority*, a labor paper published in Chicago. This publication desires to secure 2000 new subscribers in Seattle and nearby districts, and that is one mission of Foster. The picnic is given under the auspices of the Metal Trades Council of Seattle, an organization embracing no less than 19 different trades, with its headquarters in the Collins building, Seattle.

Little Falling Off in Detroit

DETROIT, Aug. 21.—The Employers' Association of Detroit has sent out the following statement to its members under date of Aug. 18:

Contrary to rumors and the general expectation, our labor barometer shows a net increase of 240 men in the week of Aug. 17. This barometer covers 78 firms with an employing strength of 200,000. Some of these firms report decreases, the total being 2833, but others are increasing and added in the week 3073 men. Five firms, employing 2574 men, are running short hours, having reduced their schedule by about five hours a week. All of the others report that they are now running normally, except in so far as the power shortage necessitates their operating part of their force on night shifts.

To review the situation, there is a net decrease of slightly less than 7 per cent in the working forces of these firms since April 1.

The Superior Sheet Steel Co., Canton, Ohio, has placed in operation its new plant at Louisville, Ohio. Four of the hot mills, two stands of cold mills and portions of its other departments are now in operation.

More Cars for Oil Country Tubular Goods

PITTSBURGH, Aug. 23.—Sixty open-top cars daily are made available for the shipment of oil country tubular goods from Pittsburgh and Youngstown mills by permit No. 107 of the Interstate Commerce Commission, further modifying orders Nos. 7 and 9. This permit, issued at the behest of the American Petroleum Institute, is expected to provide much relief for oil producers who must have supplies of pipe and casings to continue operations or complete construction of wells now under construction. Michael J. Gormley, representing the American Petroleum Institute, will act with the railroad car service committees here and in Youngstown in passing on merits of claims for supplies.

The permit is not effective outside Pittsburgh and Youngstown, and only the manufacturers located in these centers will be able to secure allotments of these extra cars, which under the order are to be of Western ownership and are to move to the western and southwestern oil fields, where the need of supplies of pipe is most pressing. Allotment of cars is to be upon the base of capacity of the different companies. Under this distribution the National Tube Co. is to receive 24 cars, the Youngstown Sheet & Tube Co. 13, the Republic Iron & Steel 7, Spang, Chalfant & Co. 7, Jones & Laughlin Steel Co. 6, and A. M. Byers Co. 4. The Youngstown allotment will be divided by the Youngstown Sheet & Tube Co. and the Republic Iron & Steel Co., as the only producers in that district.

The minimum carload of pipe going West is 86,000 lb., or 43 tons, but as the permit allows the use of open-top cars, regardless of the height of the side, it is probable that the loadings will average well up to 50 tons per car, making possible the shipment of approximately 3000 tons daily from both centers during the life of the order.

Outlook in Foundry Trade

CHICAGO, Aug. 21.—The foundry industry, which has been exceptionally busy throughout the year, has not been materially affected by curtailment in automobile and motor truck output. It is to be noted, however, that many melters are working against large backlog accumulated earlier in the year rather than on new orders. Foundries which have a diversified output are in a strong position, while those which have specialized on automotive work are reaching the point where they will need new business. That some melters are already in that situation is indicated by offerings of resale iron at several points in Michigan. The experience of a large Eastern manufacturer which was recently forced to job out its foundry work because of a strike is also indicative of easier conditions; this company, which uses quantities of castings ranging from small to large sizes, not only succeeded in contracting for all its work within a few weeks, but is still receiving numerous offers from melters. It is felt in some quarters that heavy purchases of equipment by the railroads will offset slackening in other lines, but whether railroad buying of large proportions will actually materialize this fall is open to conjecture.

The Uehling Instrument Co., 71 Broadway, New York, manufacturer of fuel economy equipment, announces that it is now being represented in New England by the Smith Engineering & Supply Co., 89 State Street, Boston, manufacturers' agent and engineer, specializing in power plant equipment. S. W. Smith, president of the latter company, was until very recently associated with the Uehling Instrument Co., with headquarters in its New York office.

CANADA'S STEEL TARIFF

Its Relation to Exports from the United States— Proposed Downward Revision

WASHINGTON, Aug. 24.—Plans for the revision of the Canadian tariff laws have a particular interest for the American iron and steel industry. No other section of the Canadian tariff statutes is so comprehensive as the one which covers importation of iron and steel. More than 100 individual paragraphs are devoted to this industry. The law, as it stands, was carefully written to protect Canadian industries. If Canada produced the article in question, it was pretty sure to put that article under a protective tariff. If Canada did not, the duty was low or probably removed entirely. The appointment of the Canadian tariff commission, which has announced its program for this fall's work of revision, was largely the result of pressure from the liberal elements who want revision downward. Much of it comes from the rural districts where the farmers complained of the high prices of agricultural machinery.

The city dwellers who are not participants in a protected industry declare that the tariff was responsible for much of the high cost of living. On the other hand the Canadian industrial representatives insisted that a reduction of the tariff would leave them defenseless against American industry. They pointed out the large number of infant industries which were established during the war and which they claim could not exist if the tariff walls were to be weakened. Another argument they used with considerable effect was the increasing number of branch factories which were being established in Canada by American manufacturers.

The question of a general tariff revision in Canada also includes an important item of "imperial preference." The present schedules include varying degrees of reduction in favor of other members of the British Empire. It does not seem likely, however, that these

percentages will be increased, as Canada in the past has not been enthusiastically in favor of this preference.

In the fiscal year ending June 30, 1920, the United States exported to Canada \$890,135,023 worth of manufactured and other products, against \$810,745,160 in the preceding year. These figures were almost double the imports from that country. In 1920 the imports from Canada were \$537,377,381, and in 1919 they were \$468,954,818. Only one country was a greater customer of the United States in 1920, namely, England. In 1919 France bought more than Canada, but receded to third place in 1920.

The Bureau of Foreign and Domestic Commerce has not complete itemization of all the exports of iron and steel to Canada during 1920. The more important items, however, are of considerable interest in showing the fluctuations in values of some of the larger totals of this commerce. The following table contains the values of iron and steel exports to Canada for the fiscal years ended June 30, 1919 and 1920, as far as such exports have been compiled:

Iron and Steel Exports to Canada

	Fiscal Year 1919	Fiscal Year 1920
Pig iron	\$3,437,416	\$1,224,184
Billets, ingots and blooms	13,030,095	355,946
Locomotives	517,321	587,817
Metal-working machinery	4,581,495	5,676,288
Sewing machines	550,134	99,204
Typewriting machines	900,233	1,254,659
Wire nails	197,838	59,568
Cast iron pipes and fittings	704,382	840,947
Wrought pipes and fittings	1,165,209	1,250,828
Steel rails	2,601,709	503,603
Galvanized sheets and plates	1,344,747	2,928,022
Steel plates	15,825,948	11,621,928
Steel sheets	5,248,277	5,259,521
Structural iron and steel	7,656,738	5,989,174
Tin and terne plates and taggers tin	9,082,355	8,274,355
Barbed wire	1,293,612	2,256,532
All other wire	2,706,708	2,367,018
Mowers and reapers	302,807	432,086
Plows and cultivators	1,463,072	1,963,919
Commercial automobiles	2,456,455	4,422,649
Passenger automobiles	5,758,609	12,615,290
Freight cars	801,172	401,932

Iron and Steel Statistics for Canada for 1919

Revised Statistics and Comparison with 1918—Collected by Division of Mineral Resources and Statistics, Department of Mines, Ottawa

Canadian Statistics for iron ore, pig iron and steel as collected by the division of mineral resources and statistics, Department of Mines, Dominion of Canada, Ottawa, are as follows, converted into gross tons:

	1918 Gross Tons	1919 Gross Tons	
Iron ore—Shipments:			Exports of pig iron.....
Hematite	433	111	1,902 56,799
Magnetite	35,175	6,324	21,233 20,044
Roasted siderite	152,524	169,609	60,175 31,961
Bog ore	804	.....	31,503 14,484
Total shipments	188,936	176,044	Steel:
Sold for export	105,778	5,253	Production of ingots and castings..... 1,672,953 919,948
Imports (customs record)	1,965,034	1,592,052	Production of ingots by classes:
Charged to blast furnaces:			Open hearth..... 1,503,854 877,889
Canadian ore	86,379	69,992	Electric steel..... 103,227 7,804
Charged to blast furnaces, imported ore	1,916,959	1,494,816	Other steels..... 213 948
Charged to steel furnaces	43,392	28,936	Direct castings by classes:
Shipment from Wabana, Newfoundland	757,655	466,404	Open hearth..... 55,372 21,659
Pig iron (blast furnace):			Electric..... 3,138 6,037
Nova Scotia	371,312	254,542	Other castings..... 7,147 5,609
Ontario	611,288	667,545	Imports of steel ingots, billets and blooms from U. S. (U. S. customs record)..... 247,332 10,225
Pig iron (electric furnace)	28,599	6,876	Production of steel rails..... 145,309 282,414
Pig iron production by grades:			Production of wire rods..... 138,205 187,253
Basic	862,865	518,237	Imports of wire rods..... 38,248 31,163
Bessemer	42,362	13,695	Imports of tin plate..... 65,039 38,756
Foundry and malleable	159,017	287,515	Value of total exports of iron and steel goods..... \$61,772,613 \$84,058,924
Total production	1,067,450	819,447	Value of total imports of iron and steel goods..... \$178,340,779 \$181,332,310

October Meeting of Electric Furnace Association

The subject of refractories has been selected for the session of the Electric Furnace Association which will be held in Columbus, Ohio, on Wednesday afternoon, Oct. 6. Papers will be presented by steel men and by manufacturers of bricks and lining materials. Time will be allowed for informal discussion.

Other features are being arranged for the meeting so that it will be a considerable addition to the program of activities already planned for the first week of October in Columbus through the various foundry association meetings and foundry exhibition. The Electric Furnace Association plans to hold its session in one of the buildings of Ohio State University.

Wide Flange Beams by the Sack Method—II*

Construction of a Special Universal Mill for the Process—Details of the Various Stands and Rolls

HAVING described the roll design and the theory underlying the Sack method, the writer passes to the construction of the special universal mill in which the work is to be carried out. He considers four requirements should be solved:

1. The start must be made with the present roll stands for 900 to 950 mm. rolls (35.43 in. or 37.40 in.).

2. The new stands necessary eventually should allow an easy change from universal to normal two-high construction.

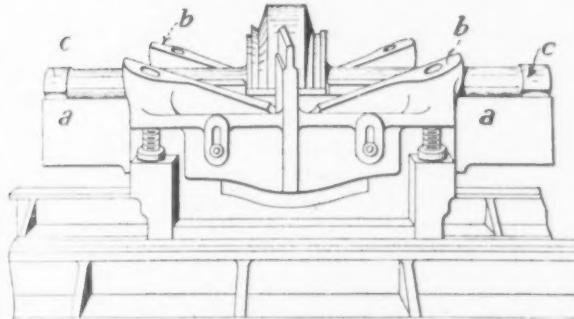


Fig. 10.—Lower Horizontal Roll with Bearing Plate

3. The lower roll should rest solid while the other three should regulate according to a certain fixed ratio, or

4. All rolls should be capable of regulation dependently and independently.

These requirements can be met by two different constructions, solving either 1 and 3 or 2 and 4. They consist of using stand construction with a stationary lower roll, or else stand construction with four separately regulated rolls.

First the arrangement with stationary lower roll, and existing roll housings will be described, although it is not believed this is the best solution of the matter. Between the two housings of a 900 or 950 mm. mill (35.43 or 37.40 in.) after the same have been moved apart to a certain distance, but without other change,

*The first instalment of this article appeared in THE IRON AGE of Aug. 19, 1920.

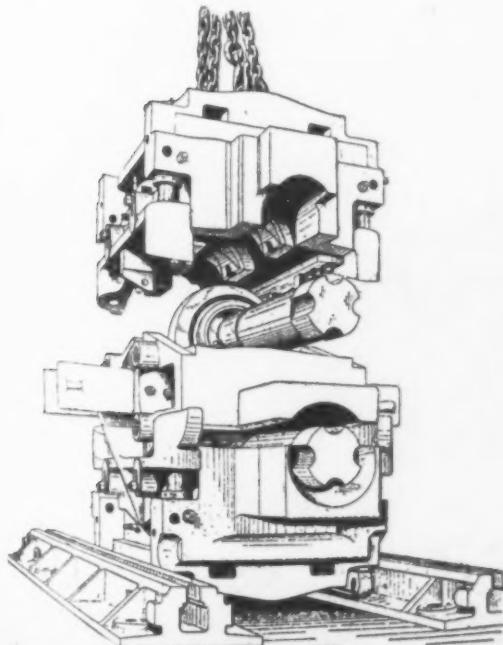


Fig. 12.—Upper Bearing Plate Being Placed Over Upper Horizontal Roll

a large heavy bearing plate is built, which carries the bearings for the lower roll. These bearings can be adjusted in a horizontal direction, and so made suitable for various lengths of rolls. On this bearing plate, so-called, guides or guide bearings are screwed on, before and behind, which have inclined surfaces and can be adjusted vertically as shown in Fig. 10. This figure shows the bearing plate, *a*, with the guide bearings, *b*, and the lower roll, *c*. The guide bearings are made of the proper width and serve as supports and guides for the vertical roll holders, *d*, which have correspondingly inclined surfaces. These vertical roll holders are strong hollow pieces in which the rolls, *e*, are carried in neck bearings.

Fig. 11 shows the construction with the vertical roll holders in place. The upper roll, *f*, must be put in position, and the upper bearing plate of the same construction as the lower one, as more clearly shown in Fig. 12. In Fig. 13 a front view is given with everything assembled ready for the moving together of the roll housings, by which the bearing plates and vertical roll holders are guided and held in place. The rolls show the last pass, that is, the finished section which only requires the straightening up of the flanges.

The lower roll and the vertical rolls rest as shown

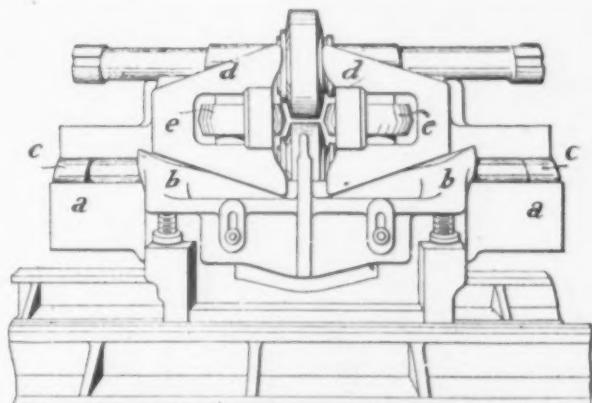


Fig. 11.—Vertical Roll Holders in Place

in the lower bearing plate, and this in turn in the roll housings. The upper horizontal roll with its bearing plate, on the other hand, rests on a supporting system which carries the weight on a hydraulic cylinder, pressing upward against the ordinary regulating screws. These pressure screws are electrically operated. Fig. 14 shows the front view of the complete arrangement ready for the first pass. Through hydraulic cylinders brought through the roll housings the vertical roll holders are drawn tight by wire ropes against the bearing plates. They are under constant pressure with the aim of drawing the vertical rolls outward, and consequently solid against the corresponding guiding surfaces, whereby the spring of the rolls is reduced to a minimum.

The method of working is as follows: After the rolls are set properly the rough blank, shown in Fig. 9, is given the first pass as shown in Fig. 14, taking a double Y shape. Then the regulating pressure screws are turned by means of a 30-hp. motor, which exceeds the upward pressure of the hydraulic cylinders. The upper bearing plate descends carrying with it the upper roll. The inclined surfaces of this upper plate press against the equally inclined surfaces of the vertical roll holders, whereby they slide downward on the lower bearing plate, and so make the pass smaller in the horizontal direction. The ratio of change is therefore constant, and in the present case is 2 to 3, that is to

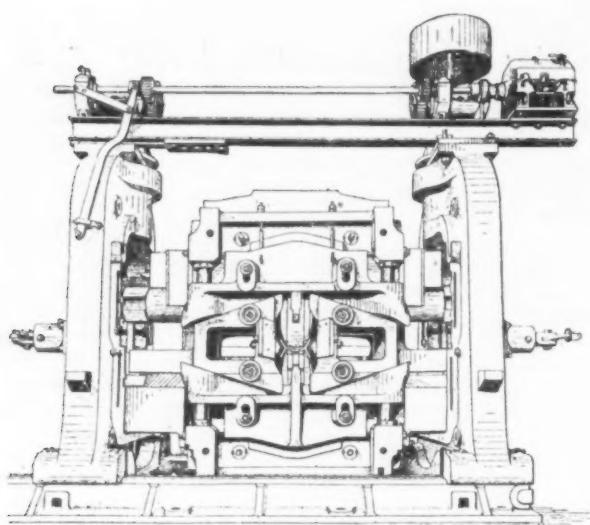


Fig. 13.—Front View of Stand, Showing Last Pass

say, with two millimeters change of the upper horizontal roll the vertical rolls move three millimeters in a horizontal direction, and at the same time will descend so that the center line is exactly opposite the middle of the horizontal rolls.

These changes are made progressively until the finished size is reached. In order to avoid bad edges the bar must be turned 180 deg. after each pass, accomplished by a specially built manipulator before and behind the rolls. This is an unsatisfactory addition, and also forces a limit to the length of the bars, which means a limit to the height of the ingots that works against efficiency.

The construction of the roll stands is comparatively simple, but the rolls are remarkably hard to get at. Also the completely dependent regulation of the rolls,

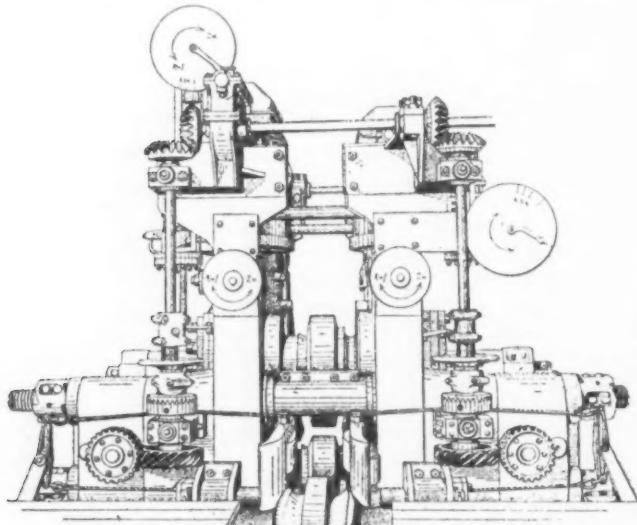


Fig. 15.—Roll Stand with Special Housings

all rolls working together and unchangeably connected with the stand construction, should cause this design to be rejected. The arrangement should be such that adjustment of the separate rolls can be carried out. Also consideration must be paid to taking care of possible unequal closing of the rolls, and reaching required final dimensions without depending entirely on the pre-determined reduction ratio.

As an ordinary two-high stand cannot be changed into a special universal stand with four rolls that can be separately regulated without great difficulty and loss of time, new stands or housings should be provided. These show no special difficulties.

For the universal layout the previously described arrangement is retained, namely, electro-mechanical movement of the rolls against hydraulic back pressure. This has the advantage over purely mechanical movement that the shock on the rolls is softened in effect,

and dead movement in one direction is completely avoided. Figs. 15 and 16 show the complete roll stand. As may be seen, the roll housings are united into a rigid frame with four strong anchor bolts that lie in two outer cross pieces and, between the housings, are provided with sleeves to maintain the proper distance. The two cross pieces serve also as resistance bearings for the vertical rolls, so that the pressure of these rolls is not borne by the housings but by the strong anchor bolts. With proper dimension of the bolts the spring of the rolls in this direction is correspondingly small.

The two horizontal rolls are carried in ordinary bearings, and movement is brought about by wedges, shown clearly in Fig. 16. As the length of roll changes with each section the bearings are made movable in a horizontal direction, without moving the roll housings, while still maintaining sufficient surface contact with the wedges. The upper roll is drawn solid against its bearings by two hydraulic cylinders with equal pressure, while the lower roll rests in its bearings solidly because of its weight.

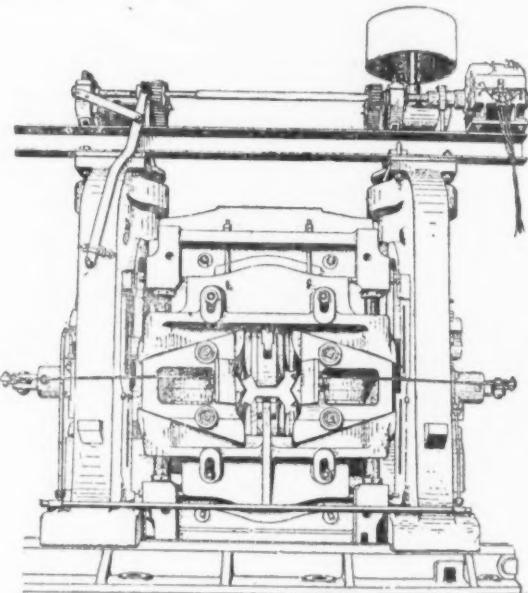


Fig. 14.—Front View of Completed Stand, Showing First Pass

The regulation of the rolls is carried out with a 36-hp. motor through gearing and screws working on the wedges. Altogether four wedges are used bringing about uniform movement of the horizontal rolls. The movement of the vertical rolls is brought about by common wedge action actuated by a special 36-hp. motor, working against uniform counter pressure of

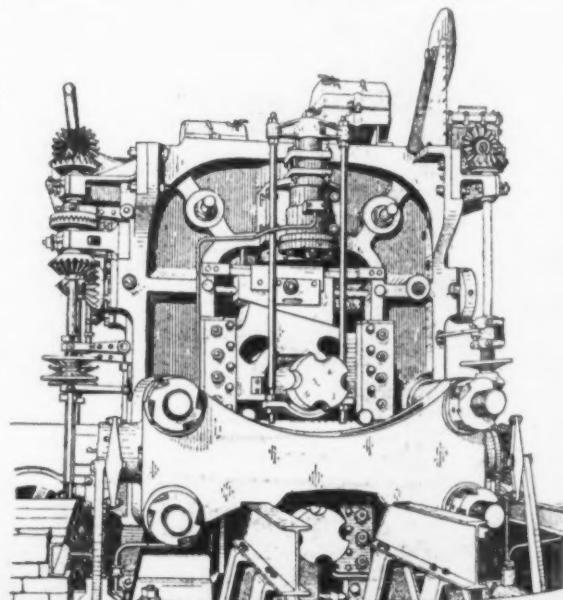


Fig. 16.—Roll Stand with Special Housings

hydraulic cylinders. During rolling both pairs of rolls are moved together. For the previous exact adjustment the wedge spindles can be uncoupled from the

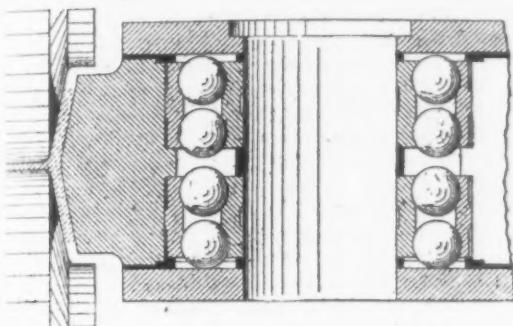


Fig. 17.—Ball Bearing for Vertical Rolls

general drive, so that each roll and bearing can be placed as desired, without influencing the others.

The two horizontal rolls are about 1150 mm. (45.28 in.) in diameter, and are driven in the usual way. The vertical rolls are about 1000 mm. (39.37 in.) in diam-

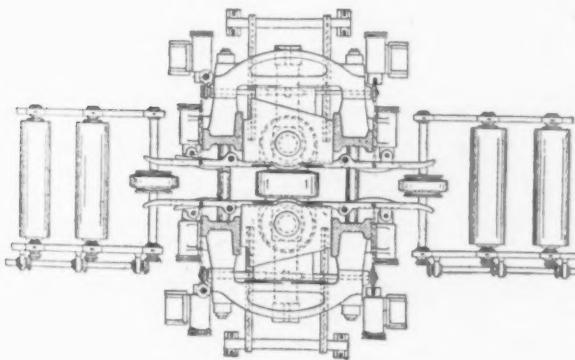


Fig. 18.—Plan in Section, Showing Guides

eter, and are not driven, working as friction rolls. An easy turning movement of the vertical rolls is very important for the rolling process, because otherwise the

web and flange material are not worked uniformly.

This can be quickly seen in the rolled product, the web of the beam showing a long tongue. This can be avoided by strong pressure of the vertical rolls, especially in the first passes, and by good bearings for the vertical rolls. In this case these rolls are simply rings with an inner ball bearing that is held by a stationary pin. The ball bearing consists of four rings each with 13 balls about 100 mm. diameter (3.94 in.), suitable for 400 tons pressure. These bearings have proved very good and require very little attendance. Fig. 17 shows a section of such a bearing.

In order to produce a good section it is further necessary to keep the piece as exactly vertical as possible in the pass, which is brought about by proper guides. Fig. 18 shows the guides used, as well as a horizontal

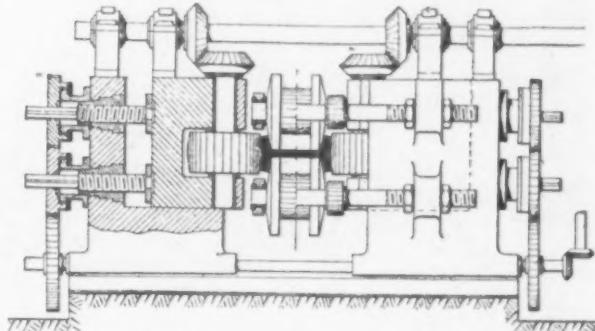


Fig. 19.—Auxiliary or Side Stand

section through the whole stand. They are actuated by hydraulic cylinders, under control of the operator. The rolling operation is as described previously with the piece turned 180 deg. after each pass. However, the method shown in Figs. 7 and 8 can be used. A so-called auxiliary or side stand is necessary and the 180 deg. tilting done away with. This additional stand is very simple, and is shown partly in section in Fig. 19.

Finally the straightening up of the flanges, accompanied by slight reduction, is carried out in a universal finishing mill with rolls designed as shown in Fig. 2. In general the construction is very similar to that last described, with four strong anchor bolts. G. B. W.

Steel Corporation's Intercoastal Service

SEATTLE, WASH., Aug. 16.—A 9650-ton steel steamship belonging to the Isthmian Steamship Co., a newly formed subsidiary of the United States Steel Products Co., which in turn is the export interest of the United States Steel Corporation, recently arrived here. This new company has inaugurated a new intercoastal service between Seattle and other coast ports via the Panama Canal, and a large fleet of boats has been assigned for this new service.

The name of the first boat put in this service is the Steel Trader. She was built at the shipyards of the Federal Shipbuilding Co., at Kearny, N. J., also owned by the Steel Corporation. The boat is 441 ft. long, beam 59 ft., molded depth 39 ft. She is equipped with turbine engines of 3500 hp. and was at first fitted to burn oil as fuel, but because of shortage in supply of oil, was changed over to burn coal, and was first placed in commission on June 16. On the trip up the Pacific Coast from the Panama Canal to Vancouver, B. C., she made 12.5 knots per hour, from Vancouver to Seattle she averaged 14 knots, and she is expected to make 13 knots on the trip back to New York. The Steel Trader sailed from New York on June 17, going from there to Baltimore, where she loaded 3200 tons of plates for Vancouver. From there she went to Cuba, where she took on 3300 tons of sugar, also for Vancouver. On arriving at Seattle, she took on dressed lumber and general cargo for New York, and at Everett, Wash., 2,000,000 ft. of railroad ties; at Portland, Ore., 500,000 ft. of railroad ties, going from there to

San Francisco, where she took on general cargo, all consigned to New York.

The next boat for this new service will be known as the Steel Worker, and she is expected to be ready for service about Sept. 1, to be followed by the Steel Maker, she in turn by the Steel Importer, the boats being scheduled for delivery two weeks apart.

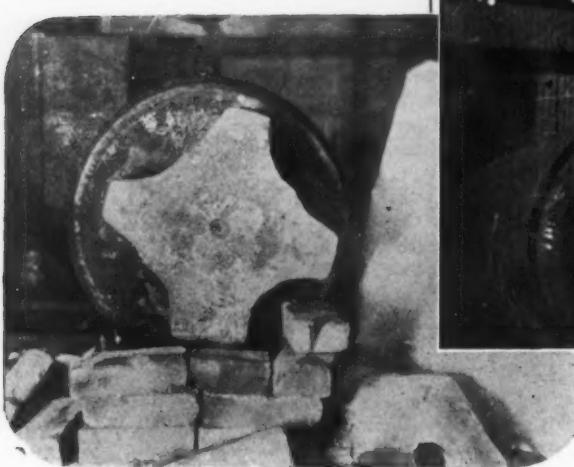
After remaining 47 years in one location the foundry of the Josiah Anstice Co., Rochester, N. Y., manufacturer of hardware specialties, was recently moved to its new building at Culver Road and Humboldt Street, that city. The new foundry is 145 x 216 ft. in size. A new factory is now being constructed, 162 x 200 ft., on the same tract. Two molders, Coney Ackerman and John DeVleiger, both of whom have been with the firm over 40 years, have been presented loving cups. Josiah Anstice, the founder, died recently and the business is carried on by his son, Mortimer Anstice. When the business was started there were 14 molders. There has never been a labor union in either factory or foundry.

The Reed-Prentice Co.-Becker Milling Machine Co.-Whitcomb-Blaisdell Machine Tool Co. combination, with headquarters at Boston, last week held its first branch managers' conference. Plants at Worcester, Mass., and Hyde Park, Boston, were inspected. The fourth and last conference day was spent at the Boston headquarters on Franklin Street.

RECOVERING MILL SCRAP

Rolls With Broken Wobblers Repaired by the Oxy-Acetylene Torch

Although the use of oxy-acetylene for welding and cutting has been an established practice in steel mills for many years, the possibilities of reclaiming large castings and heavy machine parts have only recently been fully comprehended. In the yards of one steel plant are large piles of wrecked and worn equipment, discarded as scrap, and made up largely of rolls hav-



The broken part was then built up by two welders who used long-handled Oxweld blowpipes. A soft cast-iron filler rod, $\frac{1}{2}$ in. in diameter, containing a small percentage of silicon, supplied the added metal. A neutral flame was played on the part of the wobbler to be built up and was moved in a series of overlapping circles until the metal began to fuse and form a molten bath. At this point the filling rod was presented to the flame and held until the end became molten. It was then fed into the liquid bath, which was kept molten and so puddled as to effect thorough bonding. Otherwise there would be only what is termed an adhesion. During the building up the welding rod was given a

twisting motion and the flame was moved in semi-circles about it. The agitation of the rod and the addition of some flux brought all foreign matter to the surface, where it could be easily removed with the rod or blown away by the flame. A good cast-iron flux is essential to help carry away impurities. The flux was fed into the weld frequently by dipping the heated end of the filler rod into a can of the flux and then back into the weld. The work was completed as rapidly as possible to avoid applying the flame too long at any point, which would cause burning of the metal. Very little excess metal was added to allow for machining, which in many instances was not necessary.

Another welding operation, somewhat similar



Building Up Broken Wobblers with the Oxy-Acetylene Torch. The wobblers (lower left) were cleaned with a pneumatic grinder and wire brush. After preheating, two welders (right) made the weld, using two long-handled blowpipes and soft cast-iron filler rods. The upper left illustration shows the finished weld.

ing wobblers with worn or broken teeth. This mill recently demonstrated that much rolling mill equipment can be economically reclaimed with the oxy-acetylene torch by building up the worn and broken wobblers, an application that now promises a very extended development. The procedure was as follows:

One of the wobblers was given a thorough cleaning with a pneumatic grinder and wire brush to eliminate all dirt, sand, oil and other foreign matter that might impair the weld, preparatory to preheating. The preheating was not necessary to care for expansion and contraction strains, being provided purely as a measure to secure economy in gas consumption. The roll was placed on two I-beams, blocked to prevent turning, and a wall of fire-brick was built up around the part containing the wobbler. Charcoal was then piled into the oven until it completely surrounded the part to be built up. Asbestos paper and a sheet of corrugated tin were placed over the top of the oven to confine and concentrate the heat. The oven was then fired through openings left in the brick structure to admit the air necessary for combustion, a pressure kerosene burner being used in igniting the charcoal and afterward left burning to add the heat of its own flame to that of the charcoal fire. When the casting attained a red heat the asbestos paper and tin were removed, the charcoal fire being kept burning during the welding.

to the one just described, was performed on the bed-plate of a large cast-iron cylinder, a corner of which had been broken off, and which had to be replaced before the cylinder could be used again. The broken part was prepared for preheating in the same manner as on the roll first described, excepting that the kerosene burner was applied at the top of the oven instead of through the side. As in the case of the roll, it was not necessary to preheat the entire cylinder, but only the part to be welded and its immediate vicinity.

For the quarter ended June 30 last, the Colorado Fuel & Iron Co. reports gross earnings of \$14,239,347, and net earnings of \$2,130,273, as against \$10,529,415 and \$1,144,316, respectively, last year. After interest, taxes and other charges there was a surplus of \$1,546,881, which after preferred dividends is equivalent to \$4.40 a share on the outstanding stock. The surplus for the corresponding period last year was but \$627,154, or \$1.71 a share on the common stock.

The entire line of direct current and alternating current elevator controllers manufactured by the Cutler-Hammer Mfg. Co., Milwaukee, has been replaced by a new line of controllers of fewer types and simpler construction for intermittent elevator service.

Steel Export Company Inaugurates Training Course for Employees

The International Steel Corporation, 51 Chambers Street, New York, a subsidiary of the American International Corporation, has inaugurated a standardized training course for its employees so that they will better understand the methods of conducting an export business in iron and steel products. Adoption of the training course plan follows the compilation of an office manual and information book on steel products, descriptions of which appeared in *THE IRON AGE* of Jan. 29, 1920, page 334.

Until the training course has been in operation for a while it will not be known just how long it will take for the students to complete it, but three months is the present estimate. The training course is divided into three sections: preliminary, supplemental, while awaiting assignment to a department, and specialized, once the assignment has been made. Bibliographies have been compiled to furnish suggestion for further reading.

The preliminary section is the most complete. While undergoing this training the student-employee is attached to the executive department of the corporation. His training is subdivided into seven groups and at the completion of each he is given an informal quiz. The final stage is a general review to facilitate probational assignment to one of the operating departments. These groups and the field which they cover are as follows:

Group 1.—Selected readings in the company's office manual to bring out the principles, organization and personnel of the American International Corporation and the International Steel Corporation; a study of company publications and bulletins to show the nature and correlation of the proprietary and controlled companies in the American International Corporation group, and a foreign atlas for a thorough study of world geography, with particular reference to the corporation's activities.

Group 2.—A study of the information book of the International Steel Corporation for an elemental sur-

vey of the history, progress and processes of steel-making, with the additional use of Tiemann's "Iron and Steel" as a reference book for explanations of technical terms in the information book. The information book, it should be stated, covers the processes of manufacture of steel products in as nearly a non-technical way as it was possible to describe them.

Group 3.—A study of catalogs of steel companies to show in general the range of steel products customarily handled by American steel export houses, and in particular the output of the various mills and manufacturers from whom the International Steel Corporation draws its principal supply.

Group 4.—A study of the articles on marine insurance and on foreign exchange in the company's information book.

Group 5.—The Exporters Encyclopedia and Shipping Guide is used as a text book for a study of specific information about world markets, shipping routes, mails, cables, etc.

Group 6.—This group provides for a thorough introduction to the routine of the corporation's organization. In addition to the office manual, a complete set of the office forms, the general telegraph code and private code supplement are prescribed for study. The student is also required to spend two weeks in the mail room and another fortnight coding and decoding messages in the cable department.

Group 7.—After the first six groups of study have been digested a series of trips will be arranged to a representative steel plant, a steel warehouse and to the steamship piers to give the student-employees a first-hand understanding of the manufacture and transportation of steel. A written report will be required after these trips have been completed.

Then comes a general review of the whole training course. While awaiting assignment to a department the student-employee will have access to the daily letter file and will be put on the mailing list to receive the company's weekly review of market conditions in the export field. He will also study the Commerce Reports, the Irving National Bank's publications on trading with Latin-America and the Far East and the National City Bank's foreign commerce series. The final step will be his transfer from the executive office to a department and permanent introduction into the business of the corporation.

G. R. Mellon, 933 Communipaw Avenue, Jersey City, N. J., is moving to 380 Wayne Street, same city, where he is increasing capacity for manufacturing Mellon drills, special machinery and difficult parts.



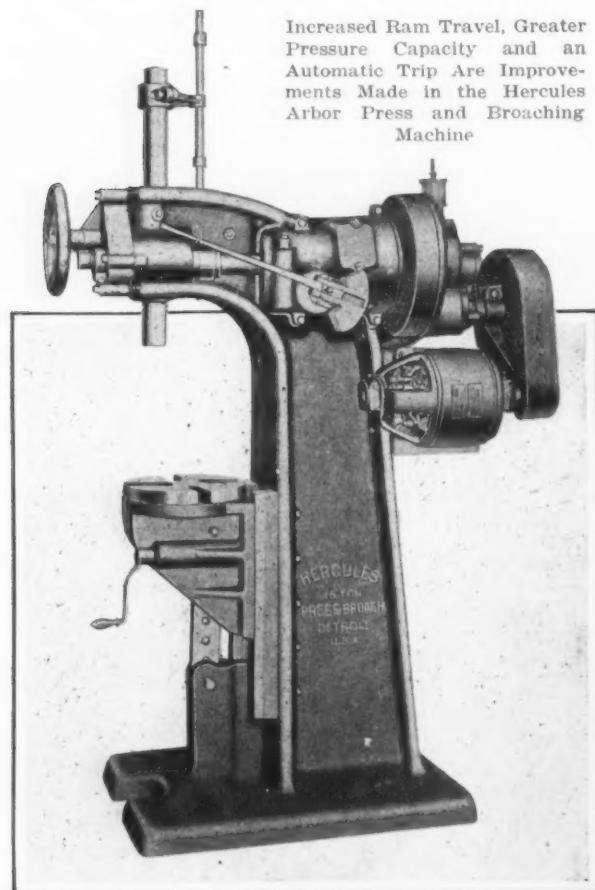
Welding a Broken Corner on a Large Cast-Iron Cylinder. The upper left illustration shows the finished weld; the lower left, preheating with a kerosene burner, and at the right, the two welders at work

Improved Power Arbor Press and Broaching Machine

The Hercules Machinery Co., Detroit, has recently made improvements in its combination arbor press and broaching machine, which not only increase efficiency, but add to the number of operations that this tool can perform. The tool now has an 18-in. ram travel, and in addition, a 14-in. up and down adjustment of the knee, making a total working distance of 32 in. The knee is also removable, which permits the use of other fixtures, and on account of the open column design of the machine, makes it readily adaptable for conveyor lines.

The machine is guaranteed to have 15 tons pressure capacity, but the manufacturer explains that due to a slight change in the design of the clutches and an

Increased Ram Travel, Greater Pressure Capacity and an Automatic Trip Are Improvements Made in the Hercules Arbor Press and Broaching Machine



increase in the gear ratio, as high as 20 tons gage pressure has been obtained. The machines are tested for 18 tons pressure and the new design calls for a shear pin in the main drive shaft, arranged to shear at 18 tons to prevent possible breakage. This, it is pointed out, leaves an over capacity of 3 tons pressure for the press.

An automatic trip is now furnished as regular equipment. This trip has the same effect as the automatic stop on a screw machine and can be set to govern the travel of the ram. When specified necessary equipment for individual motor drive is also furnished.

It is explained that the machine is being used successfully not only for operations requiring pressure but also for broaching irregular shaped holes, teeth on gears and racks, key-seating, etc. The small floor space occupied, 6 sq. ft., is emphasized as a feature.

An ink for marking metalware and enameled ware, to be used in place of string tags, gum labels and crayon, has been brought out by R. J. Strasenburgh Co., manufacturing chemist, Rochester, N. Y. The fluid may be applied with an ordinary pen. It dries quickly, it is stated, the mark is distinct and legible and will not blur or become obliterated by rubbing or handling. It can be removed with a cloth moistened with dilute alcohol.

Czecho-Slovakian Iron Industry Active

BERLIN, GERMANY, Aug. 9.—Increased coal supplies enable the Slovakian works to ship rolling mill products to Bohemia and Moravia. The Witkowitz Iron Works have contracted with Swedish ore mines for a supply of ores in exchange for coal from their own mines, while the Prague Iron Industry Co. is negotiating the supply of large quantities of ores from Lorraine.

The machine making industry is on the whole well supplied with orders; France, Italy and Rumania ranking conspicuously among her foreign customers, though considerable orders also have been executed for Polish and Jugo-Slavian firms.

The agricultural machinery line is encountering increased difficulties especially in the export trade where foreign competition is beginning to make itself felt. There can be no question of the home industries being able to satisfy the demands of the inland market as is clearly revealed by the fact that quite recently the State railroad board placed an order with American firms for freight cars, while the dearth of motor cars is illustrated by the granting of an import permit for a large number of motor cars from France.

Fabricated Steel Business at 50 Per Cent Rate

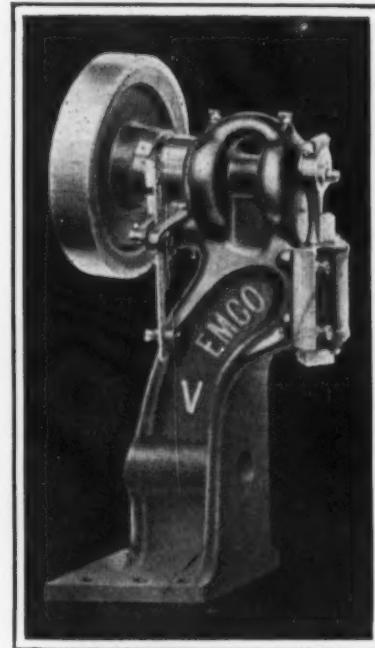
The amount of contracting for bridge and structural work in July, according to records collected by George E. Gifford, secretary Bridge Builders and Structural Society, was 90,500 tons for the entire country, compared with 90,400 tons for June. Thus for two months, business has been done at the rate of about 50 per cent, the estimate of the total monthly capacity of the structural shops of the country being 180,000 tons. The scale of business operations is the lowest since May, 1919, but the lowest amount of business written in any one month for the last seven or eight years was 12 per cent and 12½ per cent in January and February, 1919, respectively.

Light Weight Bench Horn Press

The type V bench horn press shown in the accompanying illustration is a recent addition to the line of presses manufactured by the Enterprise Machinery Co., 30 South Clinton Street, Chicago.

High speed and small but rigid working parts, it is explained, give the maker of small parts the opportunity for rapid production.

The press has a patented single stop stroke, and is made in strokes of $\frac{1}{8}$ in., $1\frac{1}{4}$ in. and $1\frac{1}{2}$ in. A $\frac{1}{4}$ in. adjustment is provided. The height is 26 in.; weight, 130 lb.; speed, 300 r.p.m. The ram is $1\frac{1}{8}$ in. square, ground to size, and the connecting rod is cast steel. The horn is $1\frac{9}{16}$ in.



Bench Horn Press for Rapid Production of Small Parts

Net earnings from operation of the Colorado Fuel & Iron Co. for the quarter, ended June 30, after deduction of expenses, but before allowance for bond interest, were \$2,130,272, an increase of \$985,957 over the corresponding period of last year. Balance for the quarter, deducting bond interest, was \$1,546,880, as compared with \$627,154 at the end of June a year ago.

Bolshevik Ruin of Metal Industries

Iron-working Plants Make Only a Fraction of Old Output—A Locomotive Works Record—Compulsory Labor Under “Middle Class” Specialists

BY OSWALD F. SCHUETTE

WASHINGTON, Aug. 24.—Interesting details of the Bolshevik ruin of the metallurgical industry in Russia form one of the most important chapters of the preliminary study of the Russian industrial situation made by the International Labor Office of the League of Nations. The plans of this organization have already been outlined in this correspondence (*THE IRON AGE*, Aug. 12, 1920, page 384). The International Labor Office has sent into Russia a special mission to study at first hand the results of the Soviet regime. As a basis for its investigations the Russian Inquiry Section, headed by Dr. G. Pardo, has completed a “Study of Labor Conditions in Soviet Russia,” which summarizes all the available information concerning this subject. It is by far the most comprehensive document so far compiled dealing with the effect of Bolshevism on industry.

Advance sheets of this work received by Ernest Greenwood, Washington correspondent of the International Labor Office, reveal important phases of the breaking down of Russian industries. Probably the most interesting of these is the outline of the nationalization of industry, by which the Soviet Government practically wiped out private effort, especially in the metal industries. According to figures credited to Prof. Miliutin, Deputy Labor Commissary, 3000 factories had been nationalized by the middle of 1919, or 90 per cent of the whole industrial productivity of the country, and only unimportant industries and home work had not been nationalized.

From October, 1917, to July, 1918, 513 business establishments had been nationalized, including 218 engaged in mining and metallurgy. But the decree of June 28, 1918, nationalized *en bloc* about every real industry in Russia, including mining, metallurgy and worked metals. This put practically the whole Russian industrial productivity in the hands of the Soviet Government. The management of the large group of plants belonging to the metallurgical industry was entrusted to a corresponding section of the Supreme Council of Public Economy, but the steam plants, public works and railroads were administered respectively by the Commissary of Supplies, the Soviet of Workers, the Soldiers’ and Peasants’ Representatives, and the Commissariat of Ways of Communication.

Each group of works was under the control of a central directory which managed the enterprise, distributed the financial resources, had charge of the technical reorganization and determined the conditions of work.

Taking Over Industry “En Bloc”

Concerning the operation of the *en bloc* nationalization the document of the International Labor Office says:

It was inevitable that a measure so tremendous as the nationalization, *en bloc*, of a whole country as huge as Russia should involve the setting up of an extremely complicated organization. It is therefore useful to summarize briefly its hierarchical system and *modus operandi*.

At the center of the whole organization is the Supreme Council of Popular Economy, which is a kind of ministry of public economy, with much wider powers than those of any other European ministerial department. It is, indeed, enough to remember that the council has the right to confiscate or nationalize any factory or enterprise, and to regulate absolutely the economic life of the country or of any particular undertaking. The soul of the council is, of course, its executive office, at the head of which we find particularly three men—Krassine, Rykov and Miliutin.

It goes without saying that the council is in its turn subordinate to the Council of the People’s Commissaries. The council is elective, the predominate elements coming from the trade unions and the District Councils of Popular Economy.

The council is divided into sections, each of which controls an industry or group of industries. The council draws up the general financial scheme for the whole of the nationalized industries. It directs the economic policy of the country. To it are attached the central directorates, also elective bodies with a preponderance of

local and technical elements. Each directorate has the practical management of a specified industry, which management is carried out with the help of the district and local directorates set up by the central ones.

Though subordinate to the council in questions of finance and the general policy of each industry, the central directorates have a good deal of independence within the limits of their own industry. They distribute the amounts appropriated to each industry among the factories which make up the group, supply them with raw materials, dispose of their products and appoint the managing staff, technical or administrative.

Each factory in its turn is controlled by the Economic Administrative Council whose powers, however, are limited to the administrative sphere, and by the Works Committee, which deals almost exclusively with the discipline of the workers and the labor relations between the management and the workers.

Metal Industries Reduced to One-Fifth

But it is in the consideration of the material results of this nationalization that the document contains its most striking chapters. Late statistics appear to have been unavailable, but in the metallurgical industry alone the figures available indicate an almost complete collapse. On Jan. 1, 1917, the metallurgical establishments employed 226,760 workers; by Oct. 1, 1918, these had dwindled to 41,963, making a reduction of 81.5 per cent.

Despite enormous subsidies from the Soviet Government factories were closed down by scores. How large these subsidies were is indicated by the fact that in January, 1919, alone the Supreme Council of Public Economy paid the various metal workers the sum of 1,167,295,000 roubles, while the copper industry alone received 1,193,990,000 roubles. The document credits the following picture of the metallurgical industry in Petrograd to Kerensky:

In all the factories a constant decrease in the number of workers and an increase in voluntary unemployment are noticeable. The total number of workers and an increase in voluntary unemployment are noticeable. The total number of workers amounted to 12,141, while 7,585 or 62.4 per cent, were working efficiently. Thus at the engineering and shipbuilding works of the Neva, now closed down, the figures of voluntary unemployment were in the first half of July, 56 per cent; in the second half, 70 per cent, and in the first half of August, 84 per cent. Of the total number of workers actually occupied, there were 440 men or 33 per cent; the rest were women and children. Of the 7,500 workers who counted as belonging to Putilov, only 2,800 or 37.3 per cent were working on Aug. 15.

The condition of large-scale metallurgy in Petrograd shows particularly clearly the disaster suffered by the Russian proletariat during the “proletarian dictatorship,” and the degree of decay reached by nationalized industry, according to the Bolshevik system. The group of large metallurgical works in Petrograd (the Putilov, Neva, Baltic, Obukhov, Baron and other works), were once the most powerful in the country. Their equipment was as good as the best in western Europe and sometimes even surpassed it (for instance the Putilov works). They employed from 100,000 to 150,000 workers. The Metalworkers’ Union was the strongest and most advanced of the workers’ organizations in the capital. The skilled workers of the great metallurgical factories were the core of this union and with those of the Printers’ Union constituted the elite of the educated workers. To-day the industry of Petrograd is in its death throes. Factories are ceasing to exist one after the other. The number of workers has fallen to 5.7 per cent of the normal.

The plight of the engineering and metallurgical works in the provinces (at Kolomna, Serpukhov, Tula, Briansk, in the Ural district) is just as bad. Taking the standard of comparison the average production of 1916, we find that the Kolomna factory gave 17 per cent, that of Myhchi 27 per cent, the others from 40 to 70 per cent. In general, the factories of this group supply only 33 per cent of the 1916 production. It is noteworthy that the Ural works were definitely demolished by Kolchak, in most barbarous fashion when the Ural was evacuated. Statistical evidence on the Metallurgists’ Union shows that here, too, small enterprises stand Bolshevism better than large ones.

Locomotive Labor Cost Up 1300 Per Cent

A Russian communist paper is quoted as saying: “The productivity of the locomotive building works has diminished greatly, nine Russian works turned out in 1918 only 191 locomotives instead of 530 as in 1917. Productivity has dropped, especially in the Putilov works, which in 1918 turned out only 7 locomotives.”

The same journal is credited with the following

summary of the breakdown in production in the Neva works:

"1. Before the revolution the productivity of the worker expressed in locomotives was equal to 0.002 (1916). In 1918 it was equal to 0.0004, or in other words, the workers' productivity is five times less than it was."

"2. Expenditure of electric energy for one locomotive in kilowatt hours: In 1916, 62,000; in 1918, 188,714. An increase in energy of 200 per cent."

"3. Amount of labor employed for one locomotive: In 1916, 15,600; in 1918, 63,920. An increase in labor of 300 per cent."

"4. Finally, the price of labor for one locomotive was, in 1916, about 100,000 roubles; in 1918, about 1,400,000 roubles. That is an increase in the price of labor for one locomotive of 1300 per cent."

Compulsory Labor Under High Priced Specialists

"Such are the facts," says the International Labor Office pamphlet. "They prove by their evidence that one of the principal factors of the decrease in production of the works and factories of Soviet Russia is the decrease in the workers' productivity; the first is a corollary of the second."

Facts like these are the basis of the various attempts which the Soviet Government has made to put into operation compulsory labor, even to the extent of enforcing it by military laws.

The details of these proceedings, however, seem to be a part of the mystery of darkest Russia, which the Russian Mission of the International Labor Office is trying to answer. In the same way it is investigating the interesting fact that the Soviet Government finally found it necessary to employ "specialists" at large salaries to take over the actual direction of the nationalized industries. The document quotes Lenin as defending this employment of specialists as the only way in which the industries can be saved from ruin. It quotes the following interesting announcement of the Soviet leader:

"You Menchevists and you revolutionary Socialists, you laugh at what we admit is a backward step. But it is better to explain openly to the people that, in winning over the middle class specialists by big salaries, we are betraying the principles of the Commune, it is better to discuss the thing publicly and thus educate the people to overcome these weak points, than to conceal it."

"Even supposing that we are obliged to pay large salaries—25,000 roubles each—for highly specialized skilled workers and to pay, too, big premiums for work carried out in a particularly successful manner; supposing that, for some hundreds of these specialists, we have to spend 50,000,000 or 100,000,000 roubles a year, should such a sum be considered excessive or beyond Russia's resources? Certainly not. It is true that high salaries involve great danger; they exert a corrupt influence. But every reasonable man must agree that we cannot free ourselves of the evils of capitalism at one stroke; only organization and discipline will insure our success."

Workers Deprived of Voice

As the result of all this, there was a reorganization in the management of the nationalized enterprises and the technical chiefs were made solely responsible to the central directorate. Under the decree of reorganization the technical chief appointed the technical employees and gave all orders concerning technical management of the undertaking. The workers were side-tracked under the provision which stipulated that the Economic Administrative Councils should be composed two-thirds of clerks and engineers of the establishment and only one-third of the workers. Finally, the latter were deprived of all voice in purely technical matters.

Applications for the complete text of the report should be made to Mr. Greenwood's office, 618 Seventeenth Street, N. W., Washington, D. C., to be filled when copies reach this country. The mission which the International Labor Office has sent into Russia consists of five employers, five workers and two Government delegates. A similar mission is to be sent into Russia by the Council of the League of Nations. Two of these members are to be appointed by the Labor Office. The council asked that these be appointed from the Labor Office mission but Albert Thomas, chief of the Labor Office, refused this request.

CUTTING AND WELDING

Various Applications of the Electric Arc in the Steel Mill

Applications and advantages of electric arc cutting and welding in steel mills were discussed by C. J. Hol slag, chief engineer Electric Arc Welding Co., 222 Halsey Street, Newark, N. J., in a paper presented before a recent meeting of the Pittsburgh section of the American Welding Society, in part as follows:

Although it is the common practice in the steel industry to use gas for cutting, yet there are many places where the electric arc can be used advantageously for cutting because of the resulting saving in cost. One of the most outstanding examples where such a saving would result is that of rivet cutting. Here an outlay of 10 or 15 cents per hr. for power and practically no other cost except one man's labor will cut from 100 to 200 rivets per hr. at an average cost of three-quarters cent per rivet.

The arc will also cut scrap sections into charging size at a rate depending on the thickness, but at the same low cost for power. The thickness that can be economically eaten through by the arc lies below 4 and 6 in. for straight arc cutting. For heavier sections the speed of gas is greater than that of arc cutting, so much so that the gas cutting is cheaper because of the smaller labor costs. There is a method of nicking or breaking, however, where electricity is more efficient than gas for any size. In any scrap pile the majority of the work is economically electric, the heavier sections may be nicked and broken, or cut through with gas.

Other uses of the arc for cutting are cobbles, hot or cold, fringe and overflow of ingot molds and miscellaneous cutting and marking of scrap ends and mistakes in rolling, etc. A field not yet fully developed, but being worked on industriously, is the substitution of the arc for hand chipping of seams in billets, especially those of complex alloy steels.

Current Values for Cutting

The current values necessary for these cutting operations run from 280 to 320 amp. for nicking or seaming with a special electrode giving off oxygen at the heat of the arc to 450 to 550 amp. for graphite arc nicking, 600 amp. for rivet cutting and 800 to 1200 amp. for general and heavy cutting. The voltage of the cutting arc runs between 27 and 45, a good average being 37. An interesting feature about variations of current and voltage is that the maximum heat occurs with an arc length just longer than a "sputtering" arc. This fact, combined with the fact that the radiation losses are greater with the longer arc, makes it apparent to the operator that as far as maximum speed is concerned, the best arc is a reasonably long one or a reasonably short one, whichever wording is preferred.

A new development in arc welding, as yet being applied only on heavy castings, is welding directly with a metallic electrode from $\frac{1}{8}$ in. to $\frac{3}{4}$ in. in diameter and current values of 350 to 750 amp. With this heavy heat rate, i.e. 12 to 15 kw. at the arc, special handle leads, etc., are necessary, and so much metal is molten at a time and the temperature being generally higher, it is practically imperative to use some oxide and nitride restraining flux. Because of the great majority of this heavy work being re-entrant, hole filling and speed being generally one of the results desired, the use of a slag-coated electrode where metal must be put down in layers, each layer being chipped off before another layer is applied, is out of the question, although this type of electrode has the effect desired of protecting the molten metal from the air for straightway bead work, such as welding a caulking edge.

An electrode which protects the molten metal from oxidation and nitrogenation by chemical action, i.e. fluxing action passing off the oxides and nitrides as a gas, naturally fulfills the protecting action necessary without brushing or chipping being necessary. Bare wire welding at these current values is out of the question if results reacting to the benefit of arc welding as a whole are desired.

Optical Pyrometer for High Temperatures

A portable instrument for the measurement of high temperatures known as the Wedge optical pyrometer is being marketed by the Rohde Laboratory Supply Co., 17 Madison Avenue, New York. The pyrometer can be used whenever the object to be examined shows a distinct coloration, that is to say, for any temperature above 525 deg. C. The size of the object or its distance, it is stated, does not affect the reading. Three standard types are made as follows: Any range of 400 deg. C. (600 deg. to 1000 deg. C., 800 deg. to 1200 deg. C.) the scale being divided into intervals of 20 deg. C.; any range of 650 deg. C. (775 deg. to 1425 deg. C.) the scale being divided into intervals of 25 deg. C.; any range of 800 deg. C. (600 deg. to 1400 deg. C.) the scale being divided into intervals of 25 deg. C.

The instrument consists of a brass tube, furnished with a small achromatic telescope, so arranged that the objective of the telescope focuses the image of the heated body on a movable prism placed inside the tube. The eyepiece of the telescope then reveals the magnified image on the prism to the observer. A shield prevents exterior light reaching the eye. At one side of the tube is a milled head, actuating a rack-and-pinion which moves the prism through the field of vision.

The prism is made of specially prepared dark glass, so arranged that it cuts off the light emitted by a heated body at different temperatures. For example, in looking at a heated bar of iron, as the thicker part of the prism comes gradually into the field of vision, the bar appears gradually a darker and darker color, till at a given point the image entirely disappears; this point gives the actual temperature. On looking at the scale on the side of the instrument, the pointer will be seen at, say, 1000 deg. C. A similar operation takes place in every estimation. A little practice is required to decide the exact moment when the color disappears, and here, of course, the practiced eye of the operator is of value.

Better Car Movement

WASHINGTON, Aug. 24.—The latest reports of the Car Service Association indicate considerable improvement in the general freight situation. For the week ending Aug. 7, the number of cars loaded reached the highest point of the year—942,150, against 914,128 for the preceding week and 872,073 for the same week of 1919. The record is rapidly approaching the high points of 1918—the best year in the history of American railroading—when the corresponding week had a total of 947,955 cars loaded. At the same time the number of cars on hand in excess of the number moved dropped from 84,949 in the week ending Aug. 6 to 79,123 in the week ending Aug. 13. The car shortage also decreased from 132,370 in the week ending July 30 to 125,219 in the week ending Aug. 6.

The Railroad Committee of the Chamber of Commerce of the United States is at work on a report concerning the handling of freight at terminals, which will soon be ready for publication. It will deal particularly with the possibilities of heavier loading and speedier handling.



Wedge Optical Pyrometer for Measuring Temperatures Above 525 Deg. C.

Welding Patents for Wire Fabrics

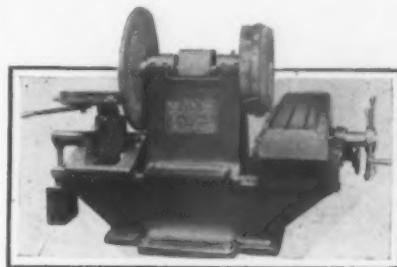
The American Steel & Wire Co. has acquired from the Wickwire Spencer Steel Corporation the right to manufacture under the patents pertaining to electrically welded fabrics. These patents went to the Wickwire Spencer company with the Clinton Wire Cloth Co. and had been used at the Clinton works for the manufacturing of reinforcing fabrics for structural and road work. The American Steel & Wire Co. will use the patents in its fabric mills of the Middle West.

The Clinton Wire Cloth Co. acquired the original fabric welding patents years ago from John Perry, the inventor of the process, and has used them exclusively excepting that the Pittsburgh Steel Co. operates under them on a royalty basis for the manufacture of wire fencing, while the Clinton company specialized in recent years on reinforcing fabrics and made no welded fencing.

The Wickwire Spencer Steel Corporation will abandon Clinton for its welding department, which will be removed to the company's Buffalo works, it being a tonnage proposition more economically carried on there than in New England.

Face Grinding Table for Badger Grinder

The Badger Tool Co., Beloit, Wis., manufacturer of disk grinding machinery and supplies, has developed a new face grinding table to be used on its regular line of single spindle disk and cylinder wheel grinders.



Badger Double Disk Grinder Equipped with New Face Grinding Table, Operated by Rack and Pinion and Hand Wheel. The disk wheel is served by a universal lever feed table.

It is pointed out that the standard base is adapted to carrying a table of this type.

The working top of the table is 10 in. x 32 in., with longitudinal travel of 32 in., the ways being 10 in. x 40 in. long. The over-all dimensions of the table top are 14 in. by 73 in., and travel is produced by rack and pinion and hand wheel, the leverage being 10 to 1. A graduated hand wheel with worm and nut gives 4 in. of feed toward the grinding wheel. Large adjustments can be made by moving the main saddle on the knee. The net weight of the complete table in the No. 8 size is 1000 lb.

Workers' Committee on Building Construction

An innovation in making provision for the safety of workmen engaged in building and construction work has been introduced in the erection of extensions to the plant of the American Rolling Mill Co. at Middletown, Ohio. At 2 p. m. each Tuesday a committee of foremen, mechanics and laborers inspect the work from sewers to roof to see that proper methods are taken to safeguard the employees against accident. The committee makes a detailed report of each inspection to a representative safety committee, which considers and puts into effect the recommendations of the inspection committee.

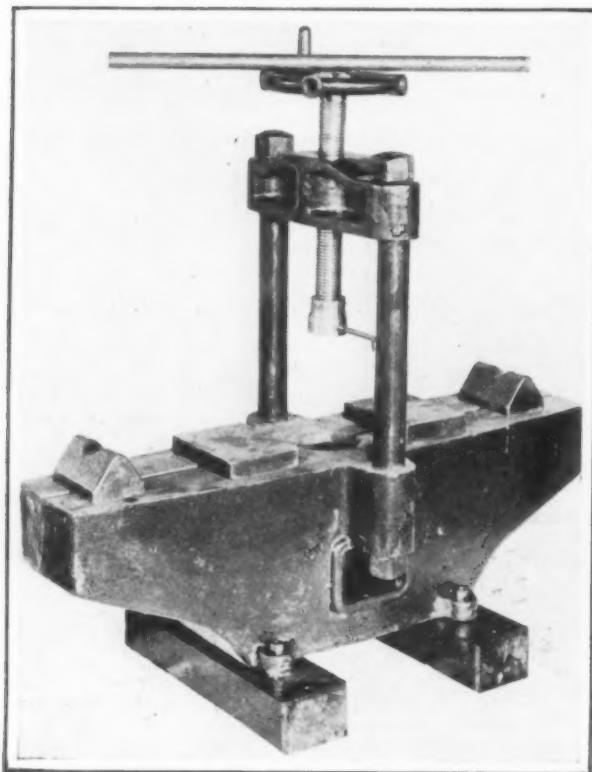
The plan was introduced and is being carried out by Dwight P. Robinson & Co., Inc., an engineering and construction organization, which recently absorbed the Westinghouse, Church, Kerr Co.

The name of Beer, Sonheimer & Co., Inc., 61 Broadway, New York, has been legally changed to International Minerals and Metals Corporation. The active business management of the corporation and its relationship to its affiliated and subsidiary companies will continue as heretofore.

Utility Screw Press

The utility screw press shown in the accompanying illustration is manufactured by Carl Pletz & Sons, Cincinnati, in two sizes, No. 3 and No. 3½. The press will straighten shafts, bars, rails, beams, etc. It is arranged to press bushings in or out, press gears or wheels on and off shafts and can also be used to form or bend metal in many shapes.

The bed is 4 ft. long, ribbed, and has a hole cored under the screw to permit work to drop through to the floor when pressed out, and to permit the pressing of pieces on or off of long shafts. The steel screw pad



Screw Press for Straightening Shafts, Bars, etc. Pressing Bushings In or Out, Pressing Gears On and Off Shafts, and for Forming or Bending Metal

fits on the end of the screw and the thrust is taken on a hardened steel and bronze washer which sets in oil. The hand wheel on the end of the screw is fitted with a handle so that the screw can be returned quickly. By using a 4-ft. bar in the hand wheel it is stated that a pressure of about 20 tons can be secured. The specifications for the two machines are as follows:

	No. 3	No. 3½
Size of screw, in.	2	2
Pitch of screw, in.	$\frac{1}{4}$	$\frac{1}{4}$
Distance between posts, in.	$12\frac{3}{4}$	$17\frac{1}{4}$
Distance under screw pad, in.	14	20
Length over all, ft.	4	4
Weight, lb.	500	600

The Pennsylvania Coal & Coke Corporation, the principal offices of which are in Philadelphia, brought suit in U. S. District Court at Pittsburgh, Aug. 21, against the Pennsylvania Railroad, alleging discrimination in the distribution of coal cars. The plaintiff, which operates 33 bituminous coal mines in Pennsylvania, asks that the railroad be enjoined from delivering to any mine more cars than it would be entitled to under its mine rating, and also that the railroad be ordered to give the company its supply of cars up to its own rating.

The Steel Fabricating Corporation, standardized sectional steel buildings, with plants at Chicago Heights and Harvey, Ill., has opened its own sales office in the Wilson Building, 1270 Broadway, New York. It has also opened a Philadelphia office in the Finance Building, and will soon be represented in other principal cities in the East.

Increased Coal and Coke Production

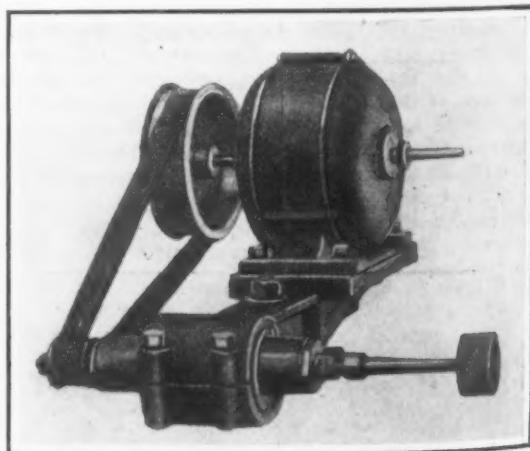
WASHINGTON, Aug. 24.—Although the recent strike in the Illinois and Indiana coal fields was followed by a speedy return to normal production, that high speed has again collapsed. A new strike is on in the Indiana fields and it threatens to spread over the State line at any time. The labor situation is now in such bad shape that Government officials are again discussing the necessity for Federal interference if the nation is to have plenty of coal during the coming winter. To make matters worse the influence of the White House with the coal miners seems to be failing, and it is feared that a mere appeal from the President will not suffice to halt the next strike. At the same time, the railroads are not able to make a proper distribution of the coal.

Production is still in excess of last year's figures. Up to Aug. 14, a total of 276,595,000 tons of bituminous coal had been mined, as against 267,503,000 tons for the same period last year. But the distribution has been imperfect, and many industries are already facing difficulties, while the railroads themselves have on hand less than an average of four days' reserve. Beehive coke production showed a decided increase in the week ending Aug. 14, rising to 417,000 net tons, against 382,000 tons in the preceding week. The increase was largely made possible by increased car supplies in the Connellsburg region.

Attorney General Palmer has announced a new crusade against "coal profiteering." In a circular order to all United States attorneys he has directed them to investigate all cases in which the price of bituminous coal to the consumer has been enhanced by repeated resales by dealers successively buying and selling the same coal, and "to institute prosecutions against such dealers where the facts warrant, for engaging in an 'unfair or deceptive or wasteful practice or device' or a 'conspiracy, combination, agreement or arrangement' to enhance the price of coal by such practice or device, in violation of the Lever act."

Portable Grinding Lathe Attachment

A portable grinding machine, intended chiefly for use on a lathe and made by the Société pour l'Industrie Mécanique, Basle, Switzerland, is the subject of the accompanying illustration. The company, believing there is a market for the device in the United States, has sent its sales manager to this country, Francois Chappuis, who has established temporary offices at



Swiss Portable Grinding Machine for Use on a Lathe

room 2632, Equitable Building, 120 Broadway, New York. The machine is fixed to the carriage on the lathe and may be arranged to carry the grinding wheel at any desired angle. It has its own driving motor with a flexible wire connection to a nearby electric socket, thus making the outfit a complete ensemble, but the company also makes the machine for operation from a countershaft. The spindle runs in ball bearings and the machine is intended for both exterior and interior grinding operations.

Factory Cabinet Bulletin Board

The Burroughs Adding Machine Co., Detroit, recently adopted a standard factory bulletin board which it has installed in all of its departments to replace the blackboards formerly used. About 60 were required. The new standardized board is made in the form of a cabinet and all notices are under glass.

The board is divided into three sections. One section is devoted to notices issued by the company's welfare board. These include announcements of community singing, band concerts, rooms and houses to rent by employees, etc. Another section contains safety hints and educational matter along accident



Glass Inclosed Bulletin Board Used by Burroughs Company With Sections Which Provide for Classified Notices

prevention lines. The third section is used for general official notices issued by the company.

The boards or cabinets are made of plain white oak with natural finish and the back is white pine. They are 4 ft. 2 in. wide and 3 ft. 3 in. high. Each section is provided with 12 screw hooks. The doors are fitted with clear glass. Their appearance is neat and the glass keeps the bulletins clean and prevents them from being blown away.

To Purchase Part of Root & Van Dervoort Plant

The Moline Plow Co., Moline, Ill., is negotiating with the Root & Van Dervoort Engineering Co., Moline, for the purchase of all of its shops except the automobile department. It is understood that the latter company will continue the manufacture of automobiles in the former ordnance plant adjacent to its present works. Nearly all the motors used in tractors and other machines produced by the Moline Plow Co. have been heretofore manufactured by the Root & Van Dervoort company.

Southern Pig Iron Silicon Differentials

BIRMINGHAM, Aug. 24.—The new silicon differentials quoted by a large Southern interest, and creating some commotion in the Southern iron field, follow: Base and first above base same as other Birmingham furnaces, namely: \$42 and \$43.25, respectively. On 2.75 to 3.25 per cent silicon, \$44.25, compared with \$45 charged by other furnaces. On 3.25 to 3.75 per cent silicon \$45.25, compared with \$46.50. On 3.75 to 4.25 per cent silicon \$46.25, compared with \$48.50. The company quoting the differentials has done a large business, especially in the Middle West.

The National Industrial Conference Board has removed its headquarters from Boston to New York, and on Aug. 23 offices were established at 10 East Thirty-ninth Street. An announcement is made that business executives and economists and others interested in the board's work will find at its offices much valuable information on industrial-economic subjects which is constantly being collected and analyzed. Magnus W. Alexander is managing director.

PIG IRON IN CANADA

Production for the First Half of 1920

The total production of pig iron in Canada in the first half of 1920, according to statistics collected by the mines branch of the Department of Mines, Ottawa, was 448,810 gross tons (446,331 gross tons made in blast furnaces and 2478 tons made in electric furnaces) as compared with a production of 468,729 tons during the first half of 1919, and 350,717 tons during the second half of 1919. The average monthly production of pig iron during the first half of 1920 was 74,801 tons as compared with an average monthly production throughout 1919 of 68,287 tons.

The blast furnace plants active during the first half of the year were those of the Dominion Iron & Steel Co., Ltd., at Sydney; the Nova Scotia Steel & Coal Co., Ltd., at North Sydney, N. S.; the Algoma Steel Corporation at Sault Ste. Marie, Ont.; the Canadian Furnace Co., Port Colborne, Ont., and the Steel Company of Canada, Ltd., at Hamilton, Ont. The blast furnace plants at Midland, Parry Sound and Deseronto, Ont., were idle throughout the period.

Pig iron was made from scrap iron and steel in two plants, the Shawinigan Foundries, Ltd., Shawinigan Falls, Que., and the Hull Iron & Steel Foundries, Ltd., Hull, Que.

The monthly production of pig iron in gross tons since 1916 has been as follows:

	1916	1917	1918	1919	1920*
Jan.	79,631	66,285	92,824	72,762	
Feb.	74,822	70,095	77,536	63,271	
March	92,668	86,471	81,505	68,888	
April	88,789	93,153	83,366	77,056	
May	97,224	93,631	74,159	87,137	
June	89,284	91,997	59,348	79,695	
July	82,153	83,481	97,967	54,399	
Aug.	78,450	89,935	85,860	60,182	
Sept.	91,725	89,835	84,966	50,719	
Oct.	101,435	92,212	95,502	50,044	
Nov.	93,246	87,415	95,165	65,260	
Dec.	95,085	77,814	106,416	70,112	
	1,043,980	1,045,072	1,067,508	\$19,444	
Average					
Monthly	86,998	87,089	88,955	68,287	74,801

*Subject to revision.

In the Field of Labor

The Willys-Overland Co., Toledo, Ohio, will operate its plant on a five-day week basis until further notice, maintaining production on an average of 550 completed automobiles per day.

Wages of puddlers in the several furnaces at Columbia, Pa., have been increased from \$13.25 to \$14.50 per ton.

An employee of the Brady Brass Co., Jersey City, Frank A. Collins, by name, of Newark, N. J., has had affirmed a verdict giving him \$2,000 damages for false arrest at a time when there was a strike against the Brady company. It appears that he was arrested on July 16, 1919, by police officials, searched, finger-printed, found guilty of disorderly conduct and ordered to leave Jersey City. The arrest appears to have been made without warrants and by orders of superiors of the police captain and police inspector who made the arrest.

Weekly earnings in June, 1920, of workers engaged in pig iron and rolling mill operations in New York State amounted to \$43.12, against \$29.98 in June, 1918, and \$15.84 in June, 1914. Weekly earnings of structural and architectural iron workers was \$32.47 in June, against \$23.68 in June, 1919, and \$13.57 in June, 1914.

The Blandon Iron Co., Blandon, Pa., has resumed operations at its local rolling mills, after a shut-down since July 3. The rate for puddling has been established at \$14.50 per ton, with increase to be made if other companies in this section grant an advance. S. E. Pflum is superintendent.

At the time of the consolidation of the Detroit Valve & Fittings Co. and the Detroit Brass Works, it was deemed advisable to combine the name of the two companies for a certain period of time in order not to lose the identity of either plant.

ESTABLISHED 1855

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Reduced Inventories

As railroad transportation improves, inventories of iron and steel-consuming plants will be lowered. It is conceivable that the amount of capital tied up in material in transit to such plants, in storage at points of manufacture awaiting delayed parts needed to complete assembly, and in finished products in process of delivery to buyers may be cut one-half. The item of interest charges will thus be less burdensome and manufacturing plants will be relieved of the expensive embarrassment of renewing loans. The lessening of pressure on banks is calculated to lower the cost of borrowing, and the recession in the automobile industry, coming as frozen credits are loosened by better railroad car movements, is actually an aid to the industrial situation as a whole.

However, an early scaling down of inventory values through lower steel prices does not appear likely. Upper extreme prices are disappearing as mill operations and shipments increase; but unsatisfied demand is still large, stocks in middle hands must be repaired, the stage is being set for railroad equipment buying, and the large increases in freight charges are now a fact. Buying pressure may not be great enough to keep the market in the hands of sellers, but the signs now are that demand cannot long remain at so low an ebb as to cause steel makers to bid actively for business at the expense of prices, if, indeed, it reaches that point. In certain lines, such as heavy general building, with winter coming on, an effort may be made to get lower quotations from building equipment and supply makers, but here as in other lines the concessions are not likely to be from to-day's minimum prices, but from the higher prices that have made the market because they represent dependable and reasonably early deliveries.

Until the extreme prices disappear, cutting can hardly be expected in the middle ground quotations of to-day. The reduction of inventories to a lower basis will come largely, therefore, through the return to a normal condition of free movement

of material into and away from manufacturing plants.

Deflation and Progress

The Federal Reserve Board may have made a secret of many things in the past six months, particularly of the details of what it considers essentials and luxuries respectively; but it made no secret of the fact that when it attempted to restrict certain classes of credits and thus bring about deflation in certain quarters it expected a great deal of criticism. In that particular the board has not been disappointed.

It is curious that among those who criticise the board's policy and demand statements as to details, there is not a greater realization of the fact that when details are withheld there is a specific reason. It is not through negligence or arrogance that the board refrains from giving the public copious explanations of how and why it reaches the conclusions that guide it in making suggestions to the banks. The war experience is certainly fresh in memory. The War Industries Board found that it would be absolutely subversive of discipline to name any commodity or industry as "unessential," for the men involved would be sure to be ready with their "arguments."

One line of criticism rather vigorously pursued in some quarters has it that the board is opposed, in particular, to the making of loans for home building. It should be remembered that many months ago it was well known in banking circles, at least, that there was a vast amount of borrowing by mortgaging houses already built, for the purpose of buying automobiles. That was certainly unfortunate for the general economic welfare and the attitude of banks toward such borrowing has been greatly altered, presumably in part through the influence of the Federal Reserve Board. In the matter of borrowing money for erecting a dwelling house, moreover, the question of the safety of the loan is always a legitimate one. The value of the building may decline from the cost of erecting it at present, and the last thing the board should do is to take any

action that would tend to support and maintain the present high cost of building.

Other criticism is directed against the board on the ground that there is a large volume of credit available and not employed. This extra credit exists as a reserve for emergencies. One of the functions of the new system was to prevent money panics. It is only a few months ago that a panic, or at least a crisis, was being predicted in many quarters, and the unemployed credit reserves are performing a very valuable service by preventing a panic or crisis. If there is an evil present now it is a vastly less evil.

While exceptions may be taken to some of the board's decisions, its general policy as it has been developing for months is calculated to further the progress of the country in the long run. Undoubtedly there are what appear to be hardships, but these should be compared with conditions that might exist even at this time if the board's policy had not been adopted, and also with conditions that would probably be developing for the future if no control had been exercised.

Steel in Automobiles

There are wide variations in the estimates current in the iron and steel trade as to the percentage of the country's output that is represented in the consumption of the automobile industry. In recent comment in these columns, under the heading, "Who Makes the Steel Demand?" the view was taken that the 1920 program for passenger cars and trucks would require considerably less than 10 per cent of the year's output of finished rolled steel. Naturally the discussion of signs of recession in automobile building and in rubber tire manufacture has been widespread, for in no other manufacturing industry are so many individuals interested, in view of the prominent place the automobile holds in their daily experience and conversation. The tendency is natural to think of the automobile and all its ramifications in industry in larger terms than are warranted by the facts.

No exact figures are available as to the output of passenger cars and trucks in the United States since Jan. 1, nor can data be had to show how far original estimates of car and truck building for 1920 must now be revised. The slowing down from the year's peak of production has been variously estimated, running in some cases as high as 30 per cent. Opinions differ greatly as to the probable rate and time of recovery from the present curtailment of operations. But from the standpoint of iron and steel consumption, and with a view to a better understanding of the place of the automobile industry as a contributor to the tonnage of iron and steel works, we have secured estimates from competent sources of the output of automobile manufacturers in 1920.

In passenger cars the figures were from 1,600,000 to 1,700,000 (against 1,586,587 reported for 1919) and the average weight of iron and steel per car—castings and rolled and forged material—is put at 1500 pounds. Using the larger number, the weight of iron and steel would be about 1,140,000 gross tons.

For trucks the figures range from 400,000 to 500,000, and the estimates of weight, from 2000 to 2500 pounds. Taking the higher figures for quantity and for weight, we arrive at a total of about 560,000 gross tons.

Adding the passenger car tonnage to that for trucks gives a total of 1,700,000 gross tons of castings and rolled steel. If, to complete the computation for automotive industries, we add 300,000 tractors and take an average of 4500 pounds weight, we have roundly 600,000 gross tons, making the estimated total for passenger automobiles, trucks and tractors in 1920 approximately 2,300,000 tons.

If we count 30,000,000 tons of finished rolled steel as the probable output for this year, it would appear that the automotive industries will fall considerably short of taking 10 per cent of the total.

Economy in Using Coal

Very properly a great deal is being said nowadays as to the desirability of economizing in the use of coal, so as to make each ton go farther. The spirit in which some of these pronouncements are made, however, is not the spirit best calculated to stimulate further progress. The spirit in some cases is that of preaching that the nation has been, is now and is likely to continue to be, unless it promptly takes the advice offered, very wasteful in its coal consumption.

It is not conducive to progress to insist that we have all been sinners and are all just as big sinners now. That viewpoint affords too much consolation for the individual. Incidentally, it is not true at all. There is scarcely an employment for coal in which a great deal of progress has not been made by some, not simply during a few years past but during many years. If it were possible to classify all the uses of coal and to state the total amount that would be required if all in a given line used the best methods that are practiced by some the amount would be very much less than the amount now required.

The better method of approach is to point out that there are already in existence models of efficiency. Industries do not need to be reformed *in toto*, but instead the laggards need to catch up with the most progressive. The iron and steel industry, for instance, shows some fine examples of efficiency. The by-product coking process is in very large part the property of the iron and steel industry, and there are in existence by-product ovens capable of carbonizing in the neighborhood of 10 per cent of the total bituminous coal production of the country. That represents a very substantial amount of progress, and more than two-thirds of that progress has been made in the past ten years. We are not standing still.

Then in the matter of power generation great progress has been made in the past 10 or 20 or 25 years. At long range view the progress has probably been more and more rapid as time passed. It is by emphasizing the fact that some men in the industry have been making much progress that those who are negligent can best be

stimulated to do their part. It requires no great knowledge to see that if we did our work of today by the methods that were prevalent 20 years ago we should be consuming vastly more coal than we now require. We have economized in the use of fuel and we must simply continue to do so and with more vigor.

Protection in the South

As long ago as in 1894, when the Wilson-Gorman curiosity in tariff legislation was evolved by the Congress then in session and was called by President Cleveland "the embodiment of party perfidy and party dishonor," it was shown that General Hancock had a basis for his assertion that the tariff was "a local issue." There were Southern Congressmen then who wanted protection for a certain few commodities in which, of course, their constituents were directly interested. Such sentiment in the South is much stronger today. The *Manufacturers' Record*, for illustration, gives space on the first page of its last issue to an extract from a newspaper editorial published at Abbeville, S. C., demanding a tariff on peanuts, and saying: "We regard the situation as of fundamental economic and political importance. It means that there must come into existence a whole galaxy of protection Democrats, or that whole sections of the South will turn to the Republican party for relief. In other words, the march of events has made the old fighting ground of the two parties untenable. Protection sentiment has been nationalized." The last sentence is important as showing that the South Carolina editor has no thought of the South getting the things it wants by log-rolling methods.

In introducing the extract, moreover, the *Manufacturers' Record* itself says: "Tobacco growers in the Virginias and Carolinas, in line with the demand of the peanut growers of these states, are beginning to realize that a protective tariff is essential to their welfare."

If the South adopts the protective tariff idea a serious breach will have been made in the ranks of its opponents. The developments are local, a reasoning from the particular to the general. But taking the question nationally, there is evidence that the enlightenment the war afforded is not to be lost. One thing was impressed upon many people who had previously paid no attention to the subject, and that was that Germany had been promoting her commerce by scientific tariffs. The wonder is that Germany went to war when the tariff policy was proving so successful.

The memory of another thing should not be allowed to wane—the importance to a country of its being self supporting. In pre-war times there were industries entitled to flourish in the United States that had not been cultivated. This country must import if it expects to export; but skill should be exercised to the end that what we import may be, as far as possible, the unessentials and luxuries. The South is right in holding that it is entitled to raise both peanuts and tobacco. In a sense these things may be luxuries, but it can hardly be claimed that American cultivation of them is relatively more expensive than American production of other commodities.

Good and Bad Export Features Balance

The hopeful signs in the export situation about balance the disappointing features. Several exporters confidently expect that Japanese business will pick up in September or October, basing their belief on instances where steel, once canceled, has recently been reordered, and upon the near elapse of the embargo on buying instituted by Japanese buyers nearly three months ago. This embargo was voluntarily established in order to use up the large stock of plates, shapes and bars already in that country, and it is now reported that these have been largely used. The yen still keeps up in value, in contrast to the currency of other nations. It is quoted between 45c. and 46c. in the United States and between 51c. and 52c. in Japan, the reason for the discrepancy being attributed to the large volume of goods which Japan is exporting.

Less hopeful signs are the threats of cancelling orders from European countries. Where these nations formerly urged continually to ship with haste goods ordered and were not particular as to whether exact specifications were filled, they are now rather arrogantly asking for rigid adherence to specifications on penalty of cancellations.

Exporters report that more steel is now available for export, and that salesmen of American steel companies are more anxious to secure business. The fact that lower prices are being offered by these salesmen is causing a waiting attitude in the hope that the lowering will continue. Some believe that possible foreign buyers are waiting to see what effect on prices the increased American freight rate will have.

China is beginning to inquire more freely, but the wide fluctuations in silver handicap business. France and Italy are the most active buyers in Europe. South America is active. Business with the Dutch East Indies is fair, though Germany and Belgium are making active competition. Australia and the Philippine Islands have been recent buyers.

A shipment of 600 tons of wire rods for Denmark was recently made through Boston, this port having been chosen because it was the embarking point of a light-draft vessel, necessary for the receiving port.

Some attribute the present conditions to the usual midsummer dullness.

England Chief Buyer of Machinery in June

WASHINGTON, Aug. 24.—England continued the chief purchaser of American metal-working machinery in June, and Canada almost got into second place, according to the figures compiled by the Bureau of Foreign and Domestic Commerce. Out of a total exportation of metal-working machinery of \$3,504,723 in that month, \$894,566 worth went to England. Japan's share was \$606,074 and Canada bought \$604,333 worth. France, which has been in second place in most months, dropped to \$409,799. Out of the total, \$846,583 represents the value of the lathes exported, \$1,127,297 "other machine tools," \$395,903 sharpening and grinding machines and \$1,134,940, "all other metal-working machinery."

O. F. S.

The American Association of Commerce and Trade, of Berlin, Germany, is to be re-established. The Chamber of Commerce of the United States has been notified that a New York advisory board has been established for the purpose of reorganizing the Berlin association. W. R. Steinway, 107 E. Fourteenth Street, is chairman of this board. The association will be reorganized to limit voting power to Americans, assuring American control.

The Pennsylvania Pump & Compressor Co., Eaton, Pa., announces the opening of additional sales offices in the following cities: Buffalo, 788 Potomac Avenue, J. B. Laird, manager; Cleveland, 232 St. Clair Avenue N. E., L. J. Wakefield; St. Louis, 1956 North Broadway, Corby Supply Co.; Minneapolis, 423 Fifth Street South, L. E. Pollard Co.; Omaha, 804 First National Bank Building, L. E. Pollard Co.

CONTENTS

New Coke Plant at Wisconsin Steel Works.....	507
Notable Features in Coal Handling, Oven Control and Recovery of By-Products, Including Light Oils	
Serious Labor Problems in Cleveland	515
Truckling to Agitators in Time of the Steel Strike Followed by Many Troubles— Practical Demonstration of Working of Shop Committees	
Wide Flange Beams by the Sack Method—II.....	519
Construction of a Special Universal Mill for the Process—Details of the Various Stands and Rolls	
Recovering Scrapped Rolling Mill Material.....	522
Rolls with Wobblers Repaired by the Oxyacetylene Torch	
Bolshevik Ruin of Metal Industries	525
Iron-Working Plants Make Only a Fraction of Old Output—A Locomotive Works Record—Compulsory Labor Under "Middle Class" Specialists	
United States Pig Iron Production in the First Half of 1920. 535	
Statistics of American Iron and Steel Institute	
Forty Per Cent Freight Increase in Effect.....	552
Typical Figures Under the New Schedule	
Immigration Questionnaire	513
Composite Price Card on Pipe.....	513
Hot Rolled Strip Makers Organize.....	513
Listing Manufacturers' Surplus Stock.....	513
Welding Castings of Different Metals.....	514
Open Side Shaper and Planer.....	514
Little Falling Off in Detroit.....	517
More Cars for Oil Country Goods.....	517
Outlook in Foundry Trade.....	517
Canada's Iron and Steel Tariff.....	518
Iron and Steel Statistics for Canada in 1919	518
Electric Furnace Association.....	518
Steel Corporation's Intercoastal Service.....	521
Export Company Inaugurates Course for Employees	523
Improved Power Arbor Press and Broach- ing Machine	524
Fabricated Steel Business for July.....	524
Light Weight Bench Horn Press.....	524
Czecho-Slovakia Iron Industry	524
Cutting and Welding	526
Optical Pyrometer for High Temperatures	527
Welding Patents for Wire Fabrics.....	527
Face Grinding Table	527
Workers' Committee on Building Con- struction	527
Utility Screw Press	528
Increased Coal and Coke Production.....	528
Portable Grinding Lathe Attachment	528
Factory Cabinet Bulletin Board	529
Southern Pig Iron Differentials.....	529
Pig Iron in Canada.....	529
Editorials	530
Reduced Inventories—Deflation and Progress—Steel in Automobiles—Econ- omy in Using Coal—Protection in South	
Electric Arc Welding.....	534
Electric Ferrromanganese	549
Increase in Patenting.....	549
Increase Lake and Coastwise Rates.....	553
Labor Notes.....	517, 529, 555
Foreign Market Conditions.....	524, 532, 553
Defective Aluminum Castings.....	555
Book Reviews	556
New Trade Publications	567
Iron and Steel Markets.....	536
Comparison of Prices.....	537
Non-Ferrous Metal Markets.....	550
Prices Finished Iron and Steel, f. o. b. Pittsburgh.....	551
Personal Notes.....	554
Obituary Notes.....	555
Machinery Markets and News of the Works.....	557
New York Jobbers' Prices.....	563

ELECTRIC ARC WELDING

Applications to Steel, Malleable-Iron and Gray-Iron Castings

Various adaptations of electric arc welding to steel, malleable-iron and gray-iron castings were discussed by Robert E. Kinkead, Lincoln Electric Co., Cleveland, before the convention last year of the American Foundrymen's Association. The applications of electric arc and oxy-acetylene welding were pointed out as having been greatly advanced as a result of the conditions brought about by the war. The certain expansion of the industry which necessitated the employment of many unskilled workmen was explained by Mr. Kinkead as having been the cause of the production of a much larger percentage of defective castings than had ever been produced before. This led to an increased interest in and extended application of welding processes to save these castings. Some of these applications were explained by Mr. Kinkead.

The carbon electrode welding process, he said, offered an important means of correcting defects in steel castings, but the extensive use of the correction process has developed fields which cannot be covered by the carbon arc process. In these cases the metal electrode method of electric welding has been substituted with success.

Welding Steel Castings

The field in which the metal electrode process is best applied, Mr. Kinkead stated, is in dealing with small steel castings where the defect is of minor importance and in larger castings where the defect occurs in a section which is thin, and on which the heat must be extremely localized.

"Good foundry practice," he said, "indicates that steel castings which have been welded by the carbon electrode process should subsequently be annealed to relieve any local internal strains which may have been introduced by the application of the heat of the arc. There are occasions, however, when it is extremely inconvenient and expensive to reanneal a casting which shows a slight defect. On such occasions the application of the metal electrode process, owing to the very great localization of the heat, will permit the correction of the defect without the necessity of reannealing."

It was explained that until recently 5/32-in. diameter metal electrode was as large as was ordinarily used in this work, but investigations have shown that 1/4-in. electrode and even 5/16-in. diameter rod may be used in the metal electrode process to good advantage on steel castings.

Welding Malleable Iron with Metal Electrode

Welding malleable-iron castings by any process, Mr. Kinkead stated, is difficult, but has been successfully accomplished on some classes of castings by the metal electrode electric welding process. "There is no difficulty whatever in welding the outer skin of a malleable casting. The metal in the weld will be soft and the metal in the skin of the casting adjacent to the weld will also be soft, but where the soft skin of the casting is only 1/32-in. deep, difficulties may be encountered in machining the casting after it has been welded, although reannealing the casting in most cases will eliminate difficulties."

An application of the metal electrode welding process to malleable castings, emphasized, was in the plugging of sand holes in castings which are to hold oil, such as are encountered in automobile work. Another use pointed out was the correcting of defects in malleable castings which occur on surfaces which are not to be machined. In this case the excess metal is removed with an emery wheel. It was explained that the welding on malleable iron is always done after the casting has been annealed, also if the casting is to be machined at the point at which the weld is made it should be reannealed.

Successful applications of the electric arc welding process, Mr. Kinkead said, have been made to the repair of gray-iron castings after they have left the

foundry. This was emphasized as an attractive feature of this class of work, because it can be accomplished without preheating the casting. It would be far from the truth, he said, to state that any broken gray-iron casting can be repaired successfully with the electric arc process, but there are many jobs which can be done and a considerable saving accomplished.

Progress in Welding Gray Iron

Two classes of work which can be done in the gray-iron foundry with the metal electrode process were described as follows:

"In the first class are large castings which come from the sand with shrinkage cracks or low spots in parts of the castings which are not to be machined. In the case of a crack, it may be opened up with a chipping tool, and steel filled in to give a measure of strength and complete pressure tightness.

"The welding can be handled with a low current, and should not be done continuously. The operator should weld for a possible 20 per cent of the time; the remainder of the time being divided up into intervals to permit the heat to be distributed throughout the locality of the weld. This practice will not harden the cast iron in the vicinity of the weld with the exception of the iron which is within 1/16 in. of the line of fusion. The steel added will not be hardened by the absorption of carbon from the cast iron for a distance greater than 1/16 in. from the line of fusion. If the welder works intermittently he will avoid having the steel shrink away from the gray iron. The difficulty in machining such a weld arises from the hard area 1/16 in. on either side of the weld.

"The second class of work which can be done with the electric arc on gray iron is in the correction of small sand holes and sand spots on surfaces which are to be machined. In work of this nature the sand hole is opened up and a nickel electrode fused into the hole by the heat of the arc. The nickel is not welded to the cast iron, but at the high temperature produced by the arc makes an intimate contact with the gray iron, which resembles an amalgamation. The nickel is then peened and the excess metal filed away. The job may be made pressure tight, and the application is entirely successful in the correction of sand spots in the bore of engine or pump cylinders. This process is not used for the repair of breaks in a casting, but is merely a method of plugging a crack or sand hole."

In the Machine Shop

Quite frequently in machining a casting defects appear which were not apparent before the casting was set up in a machine. In the case of steel castings, Mr. Kinkead said, the metal electrode arc welding process enables the operator to correct small defects without taking the casting out of the machine, and thus permits a saving to be made. The application of the nickel electrode process in the correction of small flaws in gray-iron castings which are discovered after the casting is in the machine tool also may result in a saving.

New Extras on Wire Nails and Plain Wire

The American Steel & Wire Co. has issued new cards of extras on wire nails and plain wire for August, 1920, and therefore effective at once. They are identical with the extras adopted some few months ago by independent steel wire manufacturers and printed on page 637 of THE IRON AGE of Feb. 26, 1920.

The Steel Corporation has taken a good part or perhaps all of the 8000 tons of plates and shapes for the two 12,000-ton tankers to be built by the G. M. Stanford Construction Corporation for the Imperial Oil Co., Ltd., of Canada, an interest of the Standard Oil.

Roger Hubbell, assistant sales manager Heald Machine Co., Worcester, Mass., grinding machines, has resigned to accept an appointment as sales manager with Churchill-Morgan-Crittssinger, Inc., Worcester, Mass.

United States Pig Iron Production in the First Half of 1920

The American Iron and Steel Institute in its special statistical bulletin No. 3 gives the production of all kinds of pig iron in this country for the first six months of the present year. The half yearly production of foundry iron and ferrosilicon, at 2,980,201 tons, is the largest semi-annual production since the first half of 1916. The half year's output of charcoal iron, at 155,612 tons, is the lowest for the period except the second half of 1919, when production was 152,732 tons. Details follow:

HALF-YEARLY OUTPUT OF PIG IRON BY STATES.

HALF-YEARLY PRODUCTION OF ALL KINDS OF PIG IRON.

States	Blast furnaces			Production—Gross tons			
	June 30, 1920.			Includes spiegeleisen, ferro-silicon, ferro-silicon, ferro-phosphorus, etc.		First half of 1919	
	In blast	Dec. 31	Out	Total	Second half of 1919		
Maine	0	0	0	0	4,914	8,764	6,180
Massachusetts	1	1	0	1			
Connecticut	0	1	1	2			
New York	16	21	6	27	1,140,040	930,248	1,207,475
New Jersey	1	2	2	4			
Pennsylvania	112	117	48	165	6,010,549	6,266,036	7,241,726
Maryland	4	4	2	6	129,548	114,454	254,420
Virginia	6	10	7	17	193,111	126,298	223,522
Alabama	22	28	16	44	990,122	1,139,970	1,225,236
Georgia	0	0	4	4			
Texas	0	0	1	1			
West Virginia	2	4	1	5	211,058	202,033	374,906
Kentucky	4	5	2	7			
Mississippi	0	0	1	1			
Tennessee	7	10	7	17	109,919	80,505	159,041
Ohio	54	65	14	79	3,952,117	3,150,510	4,130,811
Illinois	19	19	6	25	1,435,249	1,122,964	1,634,164
Indiana	13	12	4	16			
Michigan	10	11	2	13	1,514,697	1,200,982	1,426,045
Wisconsin	4	4	4	8	332,109	273,510	345,091
Minnesota	3	2	1	3			
Missouri	2	3	0	3			
Iowa	0	0	0	0			
Montana	0	0	0	0			
Colorado	0	3	2	5	254,742	120,845	206,985
Oregon	0	0	1	1			
Washington	0	0	0	0			
California	0	0	0	0			
Total	280	322	132	454	16,278,175	14,737,189	18,435,602

HALF-YEARLY PRODUCTION OF COKE PIG IRON.*

Maine	0	0	0	0			
New York	16	21	5	26	1,141,240	936,048	1,211,175
New Jersey	1	2	2	4			
Pennsylvania	106	107	38	145	5,942,159	6,194,946	7,094,917
Maryland	4	4	1	5	129,270	114,033	254,420
Virginia	6	10	7	17			
Georgia	0	0	2	2	194,611	126,298	223,522
Texas	0	0	1	1			
Alabama	21	27	13	40	97,998	1,130,580	1,212,718
West Virginia	2	4	1	5			
Kentucky	4	5	2	7	209,558	202,033	374,906
Tennessee	6	9	5	14	109,919	79,625	155,897
Ohio	54	65	14	79	3,952,117	3,150,510	4,130,811
Illinois	19	19	6	25	1,435,249	1,122,964	1,634,164
Indiana	13	12	4	16			
Michigan	2	3	1	4	1,532,127	1,226,394	1,502,165
Wisconsin	3	3	3	6			
Minnesota	3	2	1	3			
Missouri	0	1	0	1			
Iowa	0	0	0	0			
Montana	0	0	0	0			
Colorado	0	3	2	5	409,964	230,281	338,616
Washington	0	0	0	0			
Oregon	0	0	1	1			
California	0	0	0	0			
Total	260	297	109	406	16,036,218	14,513,712	18,133,611

* Includes ferro-alloys made with electricity, electricity and coke, etc.

HALF-YEARLY PRODUCTION OF ANTHRACITE AND MIXED ANTHRACITE AND COKE PIG IRON

Pennsylvania	5	9	6	15	67,592	70,745	146,379
Total	5	9	6	15	67,592	70,745	146,379

HALF-YEARLY PRODUCTION OF CHARCOAL PIG IRON

Massachusetts	1	1	0	1			
Connecticut	0	1	1	2			
New York	0	0	1	1	4,512	3,309	2,610
Pennsylvania	1	1	4	5			
Maryland	0	0	1	1			
Alabama	1	1	3	4			
Georgia	0	0	2	2	10,396	10,781	15,662
Tennessee	1	1	2	3			
Mississippi	0	0	1	1			
Michigan	8	8	1	9	114,579	112,294	92,382
Wisconsin	1	1	1	2	44,878	26,348	44,958
Missouri	2	2	0	2			
Total	15	16	17	33	174,365	152,732	155,612

TOTAL PRODUCTION OF PIG IRON ACCORDING TO FUEL USED.

Coke*	260	297	109	406	16,036,218	14,513,712	18,133,611
Anthracite	3	9	6	15	67,592	70,745	146,379
Charcoal	15	16	17	33	174,365	152,732	155,612
Total	280	322	132	454	16,278,175	14,737,189	18,435,602

* Includes ferro-alloys made with electricity, electricity and coke, etc.

+ Includes mixed anthracite and coke pig iron

HALF-YEARLY OUTPUT OF PIG IRON BY GRADES.

HALF-YEARLY PRODUCTION OF BASIC PIG IRON.

States.	First half of 1919.	Second half of 1919.	First half of 1920
New York, New Jersey	429,690	306,635	513,327
Pennsylvania—Allegheny County	1,679,013	1,600,701	1,646,540
Other counties	1,774,224	1,573,274	2,180,007
West Virginia, Alabama, Kentucky	514,872	552,226	601,574
Ohio	1,505,219	1,036,750	1,442,867
Indiana, Illinois	1,691,566	1,377,628	1,754,977
Michigan, Minnesota, Missouri, Colorado, Washington	315,711	136,622	221,402
Total	7,910,295	6,583,836	8,450,694

HALF-YEARLY PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON

States.	First half of 1919.	Second half of 1919.	First half of 1920
New York, New Jersey	210,510	123,930	193,096
Pennsylvania	1,059,459	2,342,712	2,523,457
Maryland	127,328	113,625	247,070
West Virginia, Kentucky, Tennessee, Ala.	181,839	62,828	193,426
Ohio	1,845,941	1,521,395	1,899,250
Illinois, Wisconsin, Colorado	856,544	629,823	862,225
Total	5,181,621	4,794,313	5,918,524

HALF-YEARLY PRODUCTION OF FOUNDRY PIG IRON AND FERRO-SILICON

States.	First half of 1919.	Second half of 1919.	First half of 1920
Maine, Massachusetts, Connecticut	4,871	8,735	6,173
New York, New Jersey	419,378	412,146	398,765
Pennsylvania	385,807	465,075	539,707
Maryland, Virginia, West Virginia	192,678	150,294	236,597
Kentucky	25,240	45,900	42,601
Tennessee, Texas	90,757	78,007	136,692
Alabama	461,306	622,083	644,494
Ohio	67,772	49,350	107,572
Michigan	183,697	145,927	170,099
Wisconsin	123,903	128,455	171,416
Minnesota, Missouri, Iowa, Colorado, Oregon, Washington	91,976	23,265	37,637
Total	2,436,023	2,480,735	2,980,201

HALF-YEARLY PRODUCTION OF MALLEABLE PIG IRON.

States.	First half of 1919.	Second half of 1919.	First half of 1920
New Jersey	2,514	6,417	2,966
Pennsylvania	53,173	93,750	101,862
Virginia, Tennessee	105	2,306	
Alabama	7,273	9,797	9,441
Ohio	41,809	56,448	52,244
Total	104,874	166,412	168,869

HALF-YEARLY PRODUCTION OF SPIEGELEISEN AND FERRO-MANGANESE

States.	First half of 1919.	Second half of 1919.	First half of 1920
New York, Pennsylvania	110,377	99,777	170,706
Virginia, Alabama, Tennessee	17,507	12,695	4,287
Illinois, Col., Mont., Wash., California	16,306	12,939	11,968
Total	144,192	125,417	186,961

* 128,054 tons ferro-manganese and 58,907 tons spiegeleisen.

HALF-YEARLY PRODUCTION OF OTHER GRADES.

States.	For sale.
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Iron and Steel Markets

RAILROAD BUYING WAITS

Production and Shipments Improved

Conflicting Influences Bearing on the Future of the Market—Ferromanganese Reduced \$25

To an increasing extent the steel trade is taking account of factors that bear on the future course of demand and of prices. While some producers, long used to thinking in terms of a seller's market, talk of passing on the cost increment due to the 40 per cent increase in most iron and steel freight rates, others dwell on the final effect on their own market of the changes going on in other industries.

With an unwieldy accumulation of unfilled orders still existing in most finished material lines, such cancellations as have come on automobile and shipyard account have not been a market factor. But there is the keenest interest throughout the market in any development bearing on the Steel Corporation's price policy for 1921 and railroad buying apparently is waiting for a cue.

The American Steel & Wire Co., whose wire nail price and that of independent makers have shown a wide spread, has put out a new card of nail extras as of Aug. 16, with no change of base. The new extras are more nearly in line with relative costs than the old—an adjustment which the independent wire companies made as far back as February. At Cleveland, new wire and wire nail prices represent the advance in freight rates from Pittsburgh to Cleveland, being 24c. per 100 lb. above the Pittsburgh base instead of 17c.

Similarly a new National Tube Co. card on oil country pipe, which is sold at delivered prices, shows advances to the extent of the increases in freight rates to the different zones. While independent producers' prices are \$10 a ton above those of the Steel Corporation on oil country goods, an advance by the former is looked for, to cover the new freights.

The Chicago market, which particularly reflects the railroad situation, has been notably quiet apart from nuts and bolts and wire products. Here and there foundries in that district are curtailing operations and some of them will soon be in need of new orders. Railroad demand there has not yet developed in sufficient volume to offset the curtailment of automobile, tractor and allied work. Gauged by cancellations and suspended shipments, a num-

ber of Detroit automobile plants are operating at about 50 per cent of capacity, while two of the largest are running full.

Production and shipments have improved in the leading steel-making centers, and Pittsburgh reports some reduction of mill stocks and nearly a complete clean-up of stored cars in railroad yards. This has caused a suspension of the Pennsylvania Railroad's embargo on shipments west of Pittsburgh from Aug. 22 to Aug. 26.

A further sign of loosening up is an order allotting 60 open-top cars per day to Pittsburgh and Youngstown pipe mills for the shipment of oil country goods to the West and South. Also box cars going into the grain districts are being loaded with steel.

Eastern makers of bolts, nuts, rivets and spikes have advanced prices about 7½ per cent. At Cleveland higher bolt and nut prices are considered likely also.

Manufacturers in other lines are absorbing the surplus production in automobile body sheets. There is still considerable pressure on sheet mills, but the conversion deals, in which sheet users bought sheet bars, have about disappeared as a factor. In these the buyers saved nearly \$10 a ton over current sheet prices.

An interesting export item is the buying of 16,000 tons of ship plates for France, the order being divided between the leading interest and an Eastern plate mill. On part of the business 3.50c., Pittsburgh, was done.

The manganese market is decidedly easier. British alloy is now offered and sold at \$170, seaboard, for delivery into June, 1921, and American producers are willing to meet this. The former British price was \$195, seaboard, and the American was \$200, delivered. Manganese ore from India is also lower at 65c. per unit.

Pittsburgh

PITTSBURGH, Aug. 24.

There is general speculation in the trade as to the action the Steel Corporation will take as to prices, in view of the increase in its costs due to the advance in freight rates. Figuring the Corporation's output roughly at 50 per cent of that of the country, estimates of as high as \$3 a ton advance in its finished material cost put the total increase on a year's output around \$45,000,000. According to other views this is an excessive estimate. Those who expect higher prices for Steel Corporation products cite the recent issuance of a new card of extras on nails by the American Steel & Wire Co., some of these being advanced, while no

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton: Aug. 24, Aug. 17, July 27, Aug. 26,
1920 1920 1920 1919

No. 2 X, Philadelphia‡	\$53.35	\$52.90	\$49.15	\$29.60
No. 2 Valley furnace†	50.00	50.00	45.00	26.75
No. 2 Southern, Cin'ti†	45.60	45.60	45.60	31.10
No. 2 Birmingham, Ala†	42.00	42.00	42.00	27.75
No. 2 furnace, Chicago*	46.00	46.00	46.00	26.75
Basic, del'd, eastern Pa.	48.30	48.30	44.40	26.60
Basic, Valley furnace	48.50	48.50	46.00	25.75
Bessemer, Pittsburgh... 49.90	48.40	47.40	29.35	
Malleable, Chicago*	46.50	46.50	46.50	27.25
Malleable, Valley	50.00	50.00	45.00	27.25
Gray forge, Pittsburgh... 50.40	50.40	44.40	27.15	
L. S. charcoal, Chicago... 57.50	57.50	57.50	32.75	

Rails, Billets, etc., Per Gross Ton:

Bess. rails, heavy, at mill.	\$55.00	\$55.00	\$55.00	\$45.00
O. h. rails, heavy, at mill.	57.00	57.00	57.00	47.00
Bess. billets, Pittsburgh...	60.00	60.00	65.00	38.50
O. h. billets, Pittsburgh...	60.00	60.00	65.00	38.50
O. h. sheet bars, P'gh...	68.00	68.00	70.00	42.00
Forging billets, base, P'gh.	80.00	80.00	85.00	51.00
O. h. billets, Philadelphia. 64.10	69.10	69.10	42.50	
Wire rods, Pittsburgh... 75.00	75.00	75.00	52.00	

Finished Iron and Steel,

Per Lb. to Large Buyers: Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	4.75	4.75	2.745
Iron bars, Pittsburgh...	4.75	4.75	2.75
Iron bars, Chicago.....	3.75	3.75	2.62
Steel bars, Pittsburgh....	3.25	3.25	3.50
Steel bars, New York... 4.02	4.02	4.02	2.62
Tank plates, Pittsburgh... 3.25	3.25	3.25	2.65
Tank plates, New York... 3.52	3.52	3.77	2.92
Beams, etc., Pittsburgh... 3.10	3.10	3.10	2.45
Beams, etc., New York... 3.37	3.27	3.27	2.72
Skelp, grooved steel, P'gh.	3.25	3.25	3.25
Skelp, sheared steel, P'gh.	3.50	3.50	3.50
Steel hoops, Pittsburgh...	5.50	5.50	5.50

*The average switching charge for delivery to foundries in Chicago district is 50c. per ton until Aug. 26, when it is 70c.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

change was made in the base price. The National Tube Co., also, without changing the basing price on oil country pipe, has issued a new price list showing advances in this product, which is on a delivered price basis, to levels taking account of the new freight rates.

The more general report about the movement of iron and steel is one of improvement. While the supply of cars still is seriously inadequate, there can be no dispute that the railroads are functioning in more nearly normal fashion, and some reduction of mill stocks as well as a practically complete clean up of stored cars in the railroad yards, has been effected. Improvement in railroad operations finds reflection in the fact that the Pennsylvania Railroad has issued an order suspending the embargo on Western shipments until Aug. 26. This order became effective at midnight Sunday.

The Interstate Commerce Commission appears to be giving the industry a little more consideration in the matter of car placements. Not only has it allotted 60 open-top cars a day to Pittsburgh and Youngstown pipe mills for the shipment of oil country goods to the West and Southwest, but it is understood to have issued an order permitting the loading with steel of box cars going into the grain producing areas. It is also considering a request that open-top cars with sides up to 44 in. be withdrawn from the coal traffic. If this request is granted, and expectations are that it will be, approximately 28,000 cars would be released for general service.

Apparently more coal is going to Lake ports than can be unloaded, and the Lake coal market is weak in the lack of new demands, due to the heavy congestion. A decline of fully \$1 a ton is noted in the market for Lake coal, which is not now quotable at higher than \$7, mine. Coal men complain that the Lake carriers are declining coal cargoes and sending back their boats light to the upper Lake ports. This is admitted in part by the ore interests, who justify this course by the fact that it is more important to get the ore down

Sheets, Nails and Wire, Aug. 24, Aug. 17, July 27, Aug. 26,
1920 1920 1920 1919

Per Lb. to Large Buyers: Cents	Cents	Cents	Cents
Sheet, black, No. 28, P'gh.	7.50	7.50	4.35
Sheets, galv., No. 28, P'gh.	9.00	9.00	5.70
Sheets, blue an'td. 9&10...	6.00	6.00	3.55
Wire nails, Pittsburgh...	4.25	4.25	3.25
Plain wire, Pittsburgh...	3.75	3.75	3.00
Barbed wire, galv., P'gh.	4.45	4.45	4.10
Tin plate, 100-lb. box, P'gh.	\$9.00	\$9.00	\$7.00

Old Material, Per Gross Ton:

Carwheel, Chicago	\$39.00 <th>\$38.00</th> <th>\$35.50</th> <th>\$26.00</th>	\$38.00	\$35.50	\$26.00
Carwheels, Philadelphia	41.00	40.00	40.00	24.50
Heavy steel scrap, P'gh...	29.00	29.00	27.00	20.00
Heavy steel scrap, Phila...	26.00	26.00	23.00	19.00
Heavy steel scrap, Ch'go.	25.50	25.00	24.50	20.00
No. 1 cast, Pittsburgh...	42.00	41.00	41.00	23.50
No. 1 cast, Philadelphia...	45.00	39.00	38.00	25.00
No. 1 cast, Ch'go (net ton)	36.00	36.00	36.00	24.00
No. 1 RR. wrot, Phila...	33.00	33.00	33.00	26.50
No. 1 RR. wrot, Ch'go (net)	24.50	24.50	24.50	19.00

Coke, Connellsville,

Per Net Ton at Oven:				
Furnace coke, prompt....	\$17.50	\$17.50	\$18.00	\$4.85
Furnace coke, future....	14.00	14.00	11.50	4.12
Foundry coke, prompt....	19.00	18.50	19.00	5.50
Foundry coke, future....	14.00	14.00	14.00	5.50

Metals,

Per Lb. to Large Buyers: Cents	Cents	Cents	Cents	Cents
Lake copper, New York...	19.00	19.00	19.00	24.00
Electrolytic copper, N. Y.	19.00	19.00	19.00	23.50
Zinc, St. Louis.....	8.10	8.00	7.85	7.60
Zinc, New York.....	8.45	8.35	8.20	7.95
Lead, St. Louis.....	8.75	8.87½	8.75	5.75
Lead, New York.....	9.00	9.12½	9.00	5.90
Tin, New York.....	45.50	48.00	48.50	56.00
Antimony (Asiatic), N. Y.	7.00	7.00	7.25	9.25

than it is to get the coal up, and also because grain soon will supersede ore as the principal lake freight. It also is asserted that because the line of ore carriers awaiting unloading is so long at the Lake ports, it is necessary to make quick trips if the ore boats are to get a place for early unloading.

Despite some demands being made for prompt shipment to escape the higher freight charges, it must be said that, in a broad way, business in steel is considerably quieter than it was a short time ago. Basis for this prompt delivery demand is found in the fact that goods billed before Aug. 26 will be carried at the old rate by the railroads. There seems to be no appreciable falling away in the demand for wire products, tin plate or sheets, but in the heavier lines, particularly plates, the market really is inactive. The scrap iron and steel market still reflects the recent big purchases of the open hearth grades, and the pig iron market maintains all of its recent strength. A \$50 basis for No. 2 foundry has become well established through sales in the week under review of between 10,000 and 15,000 tons, all for delivery over the remainder of this year, while standard Bessemer has advanced \$1.50 per ton to \$48.50, at which price at least two 1000-ton lots for early delivery changed hands.

Pig Iron.—Recent activity in foundry iron has continued in the past week, in which time at least 10,000 tons and probably more has been sold. All of the business was for delivery in the remainder of the year and carries a price of \$50 for No. 2 grade, with the usual differential for silicon. Individual sales of as much as 1000 tons to a customer have been made. The recent sale of Bessemer iron at \$50, Valley furnace, now appears to have been an exceptional one. Since last report the Union Steel Casting Co., Pittsburgh, has bought 1000 tons of this grade for fourth quarter shipment at \$47, Valley furnace. Subsequent to that transaction, was a sale of 1000 tons for prompt delivery to a Pittsburgh district melter at \$48.50, Valley furnace basis, and another of the same amount to

a buyer for September and October delivery at the same figure, Valley furnace. The week has gone by without a sale of basic grade, and few inquiries. Movement of iron from the furnaces generally is better than it has been and while some middle men are obliged to do more or less shifting of tonnages, by taking iron from consumers fairly well off and shipping it to those in need, it must be said that they are more nearly even with their obligations than they were recently.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.40 per gross ton:

Basic	\$48.50
Bessemer	48.50
Gray forge	49.00
No. 2 foundry	50.00
No. 3 foundry	49.50
Malleable	50.00

Ferroalloys.—Tendency of prices for ferromanganese is still in buyers' favor, although makers are holding firmly enough to \$200, delivered, for 76 to 80 per cent material for either prompt or deferred shipment. English ferromanganese is coming into the country rather freely and constitutes something of a menace to the maintenance of domestic prices, for the reason that consumers had duplicated in domestic material their English purchases, and now have the latter as excess tonnages. The possibility exists that some of this material may be offered for resale and as it stands purchases much below the current prices could be sold profitably at material concessions from to-day's figures. It is currently reported that fully 1000 tons of resale material is available right now, and that it probably could be bought at \$10 to \$15 per ton under the quotation of domestic producers. Small lots of spegeleisen are moving at \$80 furnace, for 19 to 21 per cent, and at \$75 for 16 to 19 per cent. The market still is extremely inactive on 50 per cent ferrosilicon and on such business as has been recently done \$78, furnace, freight allowed, has not been exceeded.

We quote 76 to 80 per cent domestic ferromanganese \$200, delivered, for prompt or last half delivery, with a reduction of \$1.50 to \$1.75 per unit for lower percentages. We quote 18 to 22 per cent spegeleisen at \$80 to \$85, furnace, and 50 per cent ferrosilicon at \$75 to \$80, furnace, freight allowed. Bessemer ferrosilicon is quoted, f.o.b. Jackson County and New Straitsville, Ohio, furnaces as follows: 9 per cent, \$66; 10 per cent, \$69.50; 11 per cent, \$72.80; 12 per cent, \$76.10. Silvery iron, 6 per cent, \$56.50; 7 per cent, \$58; 8 per cent, \$60; 9 per cent, \$62; 10 per cent, \$64.50; 11 per cent, \$67.80; 12 per cent, \$69.80. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is \$2.90 per gross ton.

Billets and Sheet Bars.—The market on sheet bars is not quotable at higher than \$70 Pittsburgh or Youngstown, as demands are not specially heavy and several makers still appear to have tonnages they are anxious to move. We note a sale of 500 tons to an oil company on a conversion deal at \$70, Pittsburgh, the bars to be rolled into black sheets for tin plate. Another sale of a similar character involving 3000 tons, also to an oil company, is noted at \$70, Pittsburgh, but this actually means somewhat less, due to the fact that the bars were to be cut to length. A maker of tin plate has put out an inquiry for 5000 tons of sheet bars and offering \$60. This inquiry is getting no consideration. Rerolling billets of base dimensions still are quotable from \$60 to \$65, but demands are rather moderate and the higher figure is not only maximum, but somewhat extreme. Forging billets are quoted from \$80 to \$85, but the most recent sale, one involving about 1000 tons, was at \$80, Pittsburgh. Somewhat improved transportation conditions and cool weather have resulted in a slight increase in active steel works capacity. The Carnegie Steel Co. now is running about 75 per cent. The Jones & Laughlin Steel Co. is running somewhat fuller, but the Pittsburgh Steel Co. is down around 50 per cent of capacity.

We quote 4 x 4-in. soft Bessemer and open-hearth billets at \$38 to \$65; 2 x 2-in. billets, \$42 to \$70; Bessemer sheet bars, \$42 to \$65; open-hearth sheet bars, \$42 to \$70, and forging billets, ordinary carbons, \$80 to \$85 base, all f.o.b. Youngstown or Pittsburgh mill.

Wire Rods.—We note a sale of 500 tons of soft Bessemer rods at \$80, for early delivery, and this seems to

be the minimum price of independent makers against inquiries from new sources, and where early delivery is required. Some shipments, however, are still being made against orders carrying a price of \$75. Offerings of free cutting Bessemer screw stock rods still are scant and they are firmly held at \$85 by the independent makers. Prices are given on page 551.

Plates.—Demands are few and extremely small, but because of the higher producing costs which the higher freight rates will create, independent makers generally continue to hold to 3.50c. for tank quality steel. There is, however, some basis for the quotation of 3.25c., as it is known that one Eastern maker would consider attractive tonnages at that figure. One of the Pittsburgh car building companies recently put out an inquiry for 7000 tons of plates, but subsequently withdrew it.

We quote sheared plates of tank quality, 1/4 in. and heavier at 2.65c., as quoted by the Carnegie Steel Co. for rather indefinite delivery, up to 3.50c., the price of independent companies, who can make reasonably early and specified deliveries.

Structural Material.—While a fair inquiry is reported by fabricating interests here, actual lettings are extremely few. Investors not only are confronted with tight money but also by the uncertainty about deliveries. Movement of plain material to the shops is rather better than it has been, the trouble now is an extreme dearth of flat cars for shipping finished material. The latter condition has resulted in heavy accumulations of fabricated steel and is interfering considerably with shop activities. No change is noted in prices of plain material. Prices are given on page 551.

Iron and Steel Bars.—Makers of merchant steel bars in a position to make reasonably early deliveries are not inclined to consider less than 3.50c., base, and 4c. still is firmly adhered to by one independent with plants in the East, and in western Pennsylvania. Some business is being done within these limits, but the demand for prompt tonnages is not nearly so insistent as it was a few weeks ago. Concrete reinforcing bars are slow of sale, due to the falling away in building operations, and new demands in iron bars are not as heavy as they were a short time ago. But makers of the latter in this district not only are heavily committed but are having almost no competition from outside districts. Consequently, they are holding firmly to the recent bases, and some are asking advances of \$5 to \$10 per ton against new inquiries.

We quote steel bars rolled from billets at 2.35c., this being the price of the Carnegie Steel Co. for very indefinite delivery, likely not before first quarter of next year. Other mills rolling steel bars from billets quote from 3c. to 3.50c. at mill, prices depending entirely on the buyer and the delivery wanted. We quote reinforcing bars, when rolled from billets, at 3.75c. to 4c., and from old steel rails at about 3.50c. at mill. We quote common iron bars at 4.75c. and refined iron bars at 5c. in carloads, f.o.b. mill, Pittsburgh.

Wire Products.—The most interesting development in this market has been the announcement of a new card of extras on nails by the American Steel & Wire Co., effective alike on both new and unfilled tonnages, as of Aug. 16. No change is made in the base price by this company. Demand for nails and wire and other common products continues brisk, although manufacturers have been making a fairly good showing in the matter of shipments. Obligations, however, were pretty heavy before transportation conditions improved and for one reason or another few companies have been able to increase production. One company here has pretty well caught up with its orders for small nails, while another has been obliged to operate large nail machines on small sizes in its effort to supply the demand. Wire capacity at present is about 65 per cent employed.

We quote wire nails at \$3.25 base, as the price of the American Steel & Wire Co. and \$4.25 to \$4.50 by independent mills. We quote bright basic wire at \$3. the price of the American Steel & Wire Co., and \$3.75 to \$4. the price range of the independent mills.

Steel Rails.—Good demand still is reported for light rails for use in connection with coal mine operation. Prices continue to show considerable variation, ranging from 3.25c. to 3.75c. for 25-lb. to 45-lb. sections, rolled from new steel, but it is evident from the fact that sales continue to be made at the higher figure that those quoting the lower price cannot meet all demands. One maker of standard rails is selling from stock at \$75, mill, for open hearth sections. Rumors still are current of the placing of 1921 tonnages by some of the railroads tributary to Pittsburgh, but confirmation is lacking.

The Carnegie Steel Co. is still quoting the March 21, 1919, prices, these being 2.45c. for 25 to 45-lb. sections, 2.49 1/2c. for 16-lb. and 20-lb. sections, 2.54c. for 12-lb. and 14-lb. sections, and 2.58 1/2c. for 8-lb. and 10-lb. sections. This company is also quoting standard sections 50 lb. and heavier at \$45 for Bessemer and \$47 for open hearth stock. The Cambria Steel Co. is quoting 25-lb. to 45-lb. sections at 3.75c., 16-lb. and 20-lb. sections, 3.79 1/2c., 12-lb., 3.84c., at mill, for such delivery as it can make. The Jones & Laughlin Steel Co. is quoting light rails at 3.25c. for 25 to 45-lb. sections.

Nuts, Bolts and Rivets.—Suggestions of a slightly easier situation in structural rivets as a result of the decline in building and ship construction activities find no confirmation among makers here, who declare they still are far behind in their orders and are holding firmly to recent prices, which they assert are low enough in view of the scarcity of steel and the prospect of increased producing costs later in the year when natural gas will not be available for industrial purposes. The situation remains extremely firm in bolts and nuts and it is doubtful if makers here will make any formal opening of books for fourth quarter business because present bookings are sufficient to engage capacity over that period. Prices and discounts are given on page 551.

Spikes.—Demand in both small and large sizes has been somewhat lighter in the past week than it was previously, but this occasions no uneasiness on the part of makers, whose order books are well filled and who cannot make deliveries against new orders much before November. Prices are given on page 551.

Hot Rolled and Cold Rolled Strips.—Demand in both products has lost much of the urgent character recently observed, although the falling away incident to the decline in activity in the automobile industry has been compensated to a considerable extent by increased demands from other users. There is still basis for quotation as low as 5.50c. base for hot rolled strips, although most makers are quoting 6c. and some 6.25c. On cold rolled strips a minimum of 9c., base, is quoted by most makers, but some companies still are billing shipments at 8.50c. base.

Hoops and Bands.—New demands are much fewer than they have been, but makers are so well committed that they are unwilling at present to seek new business at the expense of prices. Independents still are quoting 5.50c., base, while the Steel Corporation is holding to the March 21, 1919, base of 3.05c.

Iron and Steel Pipe.—Movement of oil country goods to the West and Southwest has been helped somewhat by the recent order of the Interstate Commerce Commission allotting 60 cars daily to manufacturers here and in Youngstown. Oil country pipe being sold on a delivered price basis, the National Tube Co. has issued a new card increasing prices to the extent of the freight rate increase to the different zones. In view of the fact that the independent companies all are quoting oil country pipe at \$10 per ton above the National Tube Co., much interest is manifest in the probable course of these interests with regard to prices. Although the existing premiums of independent companies over National Tube Co. prices considerably more than cover the higher freight rates, the general expectation is that the former will advance their prices. There still is considerable pressure for supplies on the part of buyers, but they have to go unsatisfied to a large extent because cars are not plentiful and production still is considerably below both normal and average. Prices and discounts are given on page 551.

Boiler Tubes.—One independent maker has cut the discount on 3 1/2 to 4 1/2-in. lap weld steel tubes to 15 per cent off list. Discounts on other sizes of steel tubes

are unchanged, as are those on charcoal iron tubes. These figures, however, as far as the independent companies are concerned merely are nominal, as they have heavy bookings and are taking on new business at prices based on their ability to ship and on prospective costs. New orders are less numerous, for the reason that makers cannot guarantee delivery short of three months and some for a more extended period, and buyers naturally are disinclined to take chances on too distant deliveries in the possibility of changed conditions before shipments can be made. Discounts are given on page 551.

Tin Plate.—At least 25,000 boxes of tin plate for last quarter delivery recently has been booked by independent makers at \$9 per base box, Pittsburgh, and that figure represents the minimum price view of most independent companies for either last quarter of this year or first quarter of 1921. Consumers still are short and there continues to be a keen demand for stock tin plate, and much anxiety by container manufacturers to enter production orders for shipment over the end of the year and in the first quarter of next year. Stock items are readily salable at \$9 and premiums over that figure sometimes are being paid by buyers in need of supplies. More or less buying of sheet bars for conversion into tin plate has been noted, one oil company having taken 3000 tons and another 500 tons. The American Sheet & Tin Plate Co. has stopped taking conversion business in both sheets and tin plate, although its receipts of steel from its regular sources of supply still are below normal. Export demand for tin plate is described as quiet.

We now quote tin plate to domestic consumers for remainder of the year delivery at \$7 to \$9 base box; stock items \$9 to \$10, and for export \$11 to \$12 per base box, all f.o.b. Pittsburgh.

Sheets.—Consumers still are pressing makers pretty heavily for shipments and a comparatively large amount of new business is being offered. Some extremely fancy prices are reported as having been paid on shipments carrying specified deliveries. It is reported that as high as 10.50c. has been paid independent makers for galvanized sheets, but no sizeable tonnages are involved, the more general maximum being 9.50c., and some rather good sized orders having been accepted at 8.75c. It is said that the latter price is more than \$10 a ton above what buyers who have had sheet bars converted have had to pay. Only slight improvement is noted in the movement of sheets on contracts, although better shipments West are expected once the Interstate Commerce Commission order allowing the loading of box cars moving to the grain producing districts becomes effective. Current sheet mill operations taking in both the American Sheet & Tin Plate Co. and the independents are about 70 per cent of capacity. Prices are given on page 551.

Cold Finished Steel Bars.—While demands are much less urgent than they were recently, the fact that makers have so much live business before them makes the lighter demand ineffective as a price influence. Makers are not anxious for more business at present and are holding firmly to recent prices. The full range is from 4.10c. to 6c., base, with the bulk of the outward bound tonnage carrying prices ranging from 4.25c. to 4.50c. Occasional sales are being made at a higher figure, but only small tonnages are involved.

Coke.—The easier tendency which developed last week as a result of a slowing down in the demand and increased production incident to a larger car supply has disappeared and the market this week is quite firm. It seems that car supplies tapered off quite sharply during the latter part of last week, and with a smaller movement against contracts the prompt demand again is on the rise. While it is reported that spot tonnages of furnace grade still are available at \$17.50 per net ton oven, and sale of 35 cars is noted at that price, the fact that one merchant furnace interest is active in the Connellsville District and offering \$18.50 for available supplies has made purchases this afternoon at less than \$18 extremely difficult. Few producers of the latter grade have any surplus over their contract obligations, and spot demands, which are quite numerous and urgent,

frequently are being supplied with coke actually of furnace grade. The outlook for car supplies this week was considered unpromising in view of the fact that yesterday the Monongahela Railroad had no cars for placement at the ovens along its line. The full range on spot furnace coke is from \$17.50 to \$18.50, and for foundry grade \$19 to \$19.50. At the close of the market, spot furnace grade hardly is quotable at below \$18, while \$19 has been reestablished as a minimum on strictly standard foundry fuel. It is reported that some contracts for furnace coke for last quarter shipment have been closed at \$14, and one producer reports an offer of \$13 for 20,000 tons a month for the six months to end March 31, 1921.

Old Material.—The market on the steel works grade still reflects the recent heavy purchases by the Carnegie Steel Co. and some of the independent companies here and in the Valley district. Heavy melting steel is hardly quotable at less than \$29, although dealers are having some success in covering sales where specifications are not too exacting at about \$1 per ton below this price. Movement of material is somewhat better than it has been, although complaints by dealers of being obliged to secure permits for shipments to a number of mills still are quite common. A well-defined effort is on foot among dealers to secure a revision of prices in old contracts against which they were prevented by embargoes and mill congestion from completing up to this time. Since the increased freight rates become effective this week, dealers stand to lose considerably in completing these contracts and since they do not feel they were at fault they believe they should be compensated to the extent of the increase in freight charges.

We quote from delivery to consumers' mills in the Pittsburgh and other districts that take Pittsburgh freight rates as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, deliv.	\$29.00 to \$29.50
No. 1 cast (for cupola).....	42.00 to 43.00
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Franklin, Pa., and Pittsburgh.....	39.00 to 40.00
Compressed sheet steel.....	24.50 to 25.00
Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh dist.....	16.50 to 17.00
Railroad knuckles and couplers.....	31.50 to 32.00
Railroad coil and leaf springs.....	31.50 to 32.00
Railroad grate bars.....	30.50 to 31.00
Low phosphorus melting stock (bloom and billet ends, heavy plates) $\frac{1}{4}$ in. and heavier.....	34.00 to 35.00
Railroad malleable.....	34.00 to 35.00
Iron car axles.....	53.00 to 54.00
Locomotive axles, steel.....	42.00 to 43.00
Cast iron wheels.....	42.00 to 43.00
Steel car axles.....	43.00 to 44.00
Rolled steel wheels.....	31.00 to 32.00
Machine shop turnings.....	15.50 to 16.00
Sheet bar crop ends (at origin).....	31.50 to 32.00
Heavy steel axle turnings.....	23.00 to 24.00
Short shoveling turnings.....	20.00 to 20.50
Heavy breakable cast.....	36.00 to 37.00
Stove plate.....	31.50 to 32.00
Cast iron borings.....	20.00 to 21.00
No. 1 railroad wrought.....	33.00 to 34.00

Youngstown

YOUNGSTOWN, Aug. 24.

Reduction of 30,000 tons in accumulated iron and steel products in the Mahoning and Shenango Valleys last week is a reflex of improved transportation situation, in view of steadily maintained output. Unshipped tonnage in the Valleys was reduced during the week from 8500 carloads, or in excess of 400,000 tons, to 7932 carloads. There are over 500 carloads of sheets and 625 carloads of tin plate in the accumulated production.

Delayed shipments have been asked by a few pipe consumers, it is understood, because of credit conditions temporarily affecting their business. Some time ago an order for 100 miles of 10-in. oil pipe was cancelled, due to failure of anticipated need to materialize. Manufacturers, however, are confident that demand will continue firm for the next year at least.

There have been no cancellations in this district of orders for deep drawn, highly finished sheets for the motor car industry, though some producers have received requests to hold up shipments for a short period. One leading automobile builder is specifying increased tonnage due to higher production.

British Iron and Steel Market

Price Tendency Lower—Sales of German Plates and Bars—Ferromanganese Easier

(By Cable)

LONDON, ENGLAND, Aug. 23.

Cleveland foundry iron has been advanced 7s. 6d. for domestic business, No. 1 now being quoted at 237s. 6d. and No. 3 at 225s. Hematite iron is unchanged and more is obtainable. Shipments of Cleveland iron are delayed by absenteeism of dockers.

The ferromanganese market appears to be weaker, but there is no change yet in prices. The best Rubic iron ore has sold at 47s. 6d., ex-ship Tees.

Domestic and export prices on heavy steel products are now tending toward each other. The position is otherwise unchanged. It is reported that a large line of shipbuilding material for the East has been placed in America at competitive prices, with time of delivery guaranteed.

German 3/16-in. plates have sold at £28 f.o.b., and steel bars at £24 f.o.b., both for October delivery. The tin-plate market is easier and demand is light. Railroads are now accepting small parcels, but not for delivery east of Swansea. Galvanized sheets are weak because of an absence of demand.

We quote per gross ton except when otherwise stated, f.o.b. maker's works, with American equivalent figured at \$3.60 for £1, as follows:

Ship plates	£26	0 to £33	0	\$93.60 to \$118.50
Boiler plates	30	0 to 35	0	108.00 to 136.00
Tees	26	10 to 32	0	95.40 to 115.20
Channels	25	15 to 31	5	92.70 to 112.50
Beams	25	10 to 32	0	91.80 to 115.20
Round bars, $\frac{3}{4}$ to 3 in....	28	0 to 33	10	100.80 to 120.60
Rails, 60 lb. and up.....	25	0 to 27	0	90.00 to 97.20
Billets	22	0 to 24	0	79.20 to 86.40
Sheet and tin plate bars,				
Welsh	23	10		84.60
Galvanized sheets, 24 g.....	45	0		162.00
Black sheets, 24 g. to 26 g.....	50	0 to 54	0	180.00 to 194.40
Tin plate base box*.....	2	18		10.44
Steel hoops.....	38	15 to 39	0	139.50 to 149.40
Cleveland basic iron.....	11	7 $\frac{1}{2}$		40.95
West Coast hematite.....	14	15		53.10
Cleveland No. 3 foundry.....	11	5		40.50
Ferromanganese	35	0 to 40	0	126.00 to 144.00
Coke	3	2 $\frac{3}{4}$		11.18

*Prompt delivery; for Oct.-Dec. 54s. (\$9.72).

Canadian Sheet Market

TORONTO, Aug. 23.—The famine which developed in sheets several months ago continues to hold the Canadian market in its grip. Supplies of black and galvanized sheets in the hands of dealers both in Toronto and Montreal are low; in fact some have nothing in stock at all and are declining to name prices. The closing down of some of the automobile factories in Canada has taken some large buyers out of the market, but these have made no difference as supplies continue to be way below the demand. This shortage of black and galvanized plates has been reflected in the supply of corrugated sheets and some manufacturers of corrugated sheets have had to close down this portion of their works until raw materials become more plentiful.

Both 3/16-in. and $\frac{1}{4}$ -in. plate are in strong demand, but up to the present dealers have been able to carry enough in stock to meet all requirements. Present prices on the above commodities are as follows: Black sheets, No. 28 gage, \$9.65; galvanized sheets, No. 28 gage, Premier, \$11.45 to \$12.70; Apollo, \$11.45 to \$12.85 per 100 lb. Corrugated sheets, No. 28 gage, galvanized, \$10.50; painted, \$8.50 per 100 sq. ft. Plates, 3/16-in., $\frac{1}{4}$ -in., \$6.50 per 100 lb. Galvanized, black and corrugated sheets are subject to premiums in addition to the foregoing prices when dealers have to pay advanced prices for spot delivery, or when they go into the local market to secure supplies for customers.

Chicago

CHICAGO, Aug. 24.

The entire market, with the exception of bolts and nuts and wire products, is characterized by a dearth of inquiry. On the whole, prices remain about the same as a week ago, although some instances of softening are to be noted. In contrast with the active condition of a few weeks ago, pig iron is very quiet. Here and there foundries in the district are curtailing operation, and it is known that many of them will soon be in need of new orders. Railroad work has not yet developed in sufficient volume to offset the curtailment of automobile, tractor and allied work.

Iron and steel production in this district is again approaching a normal basis. The Inland Steel Co. is operating all three of its blast furnaces and most of its mills, its finished output being 90 per cent of capacity. The Illinois Steel Co. has 19 active furnaces out of 29 in the district, and is finishing material at the rate of about 80 per cent of normal. The Wisconsin Steel Co. has been unable to increase its operation above the average of a week ago, which was approximately 55 per cent of capacity. The Inter State Iron & Steel Co. and the Steel & Tube Co. are working at close to capacity, and the local merchant iron furnaces are running full. Individual State conferences between coal operators and miners are expected to result in averting resumption of the strike in the bituminous fields. Transportation continues to improve slowly. Iron and steel plants are turning away applicants for work for the first time in a long period. Labor supply is steadily growing more plentiful.

Pig Iron.—The market is very quiet. New orders taken have been of small size, rarely exceeding 600 or 700 tons, and have been few in number. There has been a fair movement of cars on consignment of the eve of the freight advance, but not a great deal in terms of tonnage. Local foundries are still fairly busy, but in other portions of the district some melters have curtailed output. The diminishing demand has apparently induced some of the high price furnaces to trim their prices. A Southern interest which had been asking \$45 base, Birmingham, will now sell at \$42. An eastern Kentucky stack which is nominally on a \$50 base is offering prompt iron of silicon ranging from 3 to 4 per cent at \$45 to \$46, base, furnace. A Wisconsin melter has bought 150 tons of 14 per cent Bessemer ferrosilicon for August and September shipment at less than \$62, furnace. This is considerably below prices heretofore quoted by furnaces, and it is possible that it was resale material. One of the few new inquiries before the trade calls for 400 tons of foundry for prompt shipment.

The following quotations are for iron delivered at consumers' yards except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace and do not include a switching charge averaging 50c. per ton, which will be about 70c. a ton after Aug. 26. The delivered prices quoted below are based on the new freight rates.

Lake Superior charcoal, averaging sil.				
1.50 (other grades subject to usual differentials), deliv. at Chicago....		\$58.50		
Northern coke, No. 1, sil. 2.25 to 2.75				
last half		48.25		
Northern coke, No. 1 spot.....		48.25		
Northern coke foundry, No. 2, sil.				
1.75 to 2.25 last half.....		46.00		
Northern coke, No. 2, spot.....		46.00		
Northern high phos., last half.....		45.00		
Southern coke, No. 1 foundry and				
No. 1 soft, sil. 2.75 to 3.25.....	\$50.92 to	51.87		
Southern coke, No. 2 foundry, sil.				
2.25 to 2.75.....	49.92 to	50.37		
Southern foundry, sil. 1.75 to 2.25..		48.67		
Malleable not over 2.25 sil.....		46.50		
Basic		46.00		
Low phos. (copper free).....		57.00		
Silvery, 7 per cent.....		63.32		

Ferroalloys.—The market is exceptionally quiet. English ferromanganese is being received in good volume, and on new business is commanding \$170 to \$175, seaboard. The lowest current quotations on spiegel-eisen are \$85, furnace.

We quote 75 to 80 per cent ferromanganese, prompt and last half, delivered, \$200; 50 per cent ferrosilicon at \$85, delivered; spiegel-eisen, 18 to 22 per cent, \$85.

Plates.—The market continues quiet with independent quotations on tank plates firm at 3.50c., Pittsburgh. While the foremost interest is taking no orders for 1921, it is still accepting new business for shipment at mill's convenience, which, for a portion of its tonnage at least, means shipment next year. In the face of less new inquiry the Steel Corporation's orders and specifications are still considerably in excess of shipments, although less so than heretofore. The leading local independent is rapidly gaining in production and is now in a position to make September delivery. The feature of the week's transactions was an order placed with the foremost interest for 20,000 tons, principally plates, to be used in the construction of tankers and other vessels on the Coast. Railroad car orders are few. Armour & Co., Chicago, have bought 300 refrigerator cars from the Bettendorf Co., and the Chicago, Milwaukee & St. Paul is expected to close on 1000 box and 2000 gondola cars early this week.

The mill quotation is 2.65c. to 3.50c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. and 38c. on Aug. 26 and thereafter. Jobbers quote 3.67c. to 4.28c. for plates out of stock.

Structural Material.—There is little change in the situation, either as to demand or prices. The leading interest is accepting new business for shipment at mill's convenience, while the foremost independent is able to deliver against new commitments in 60 days or less, depending on rolling schedules. The principal fabricating inquiry of the week calls for 600 tons for the Government at Ogden, Utah. Recent lettings include:

Oliver Chilled Plow Co., South Bend, Ind., 600 tons, to American Bridge Co.
Eagle Picher Lead Co., East St. Louis, Ill., 360 tons, to Kansas City Structural Co.
First National Bank Building, St. Louis, 355 tons, to Christopher & Simpson Iron Works.
Buildings for Diocesan College, Sioux Falls, S. D., 231 tons, to Crown Iron Works.
Theater, Evansville, Ind., 200 tons, to Central States Bridge & Iron Co.
St. Louis Coke & Chemical Co., tanks at Granite City, Ill., 123 tons, to unnamed fabricator.
Chippewa County, Wis., through riveted highway truss span at Cornell, 110 tons, to Wausau Iron Works.
Iowa Highway Commission, pin connected span, Moore, Ia., 105 tons, to American Bridge Co.

The mill quotation is 2.45c. to 3.25c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery until Aug. 26 and thereafter when the rate will be 38c. Jobbers quote 3.47c. to 4.08c. for materials out of warehouse.

Bars.—The leading interest is accepting new orders for mild steel bars, but only on the understanding that shipment is to be at mill's convenience. The foremost independent is still out of the market, being committed until the end of the year. While the former's bookings in orders and specifications are of considerable volume, the market is otherwise less active. Light sizes are very difficult to obtain, but heavier bars are being placed with Eastern independents for third and fourth quarter delivery at 3.25c. to 3.75c., Pittsburgh. A few sales are still being made at 4c., but the ruling price is 3.50c. to 3.75c. The demand for both bar iron and rail carbon steel bars is not so strong as a month or two ago, but mills have large backlog.

Mill prices are: Mild steel bars, 2.35c. to 4c.; Pittsburgh taking a freight of 27c. per 100 lb., which will be advanced to 38c. on Aug. 26; common bar iron, 3.75c. to 4c., Chicago; rail carbon, 4c. mill.

Jobbers quote 3.37c. to 3.98c. for steel bars out of warehouse. The warehouse quotation on cold rolled steel bars is 5.80c. to 5.90c. for rounds and 6.30c. to 6.40c. for flats and squares, and extra of 15c. per 100 lb. applying to orders exceeding 1000 lb. and under 2000 lb. and an extra 35c. for orders up to 1000 lb.

Railroad Rolling Stock.—Difficulties in financing have prevented the St. Paul from closing on 2000 gondola and 1000 box cars. Armour & Company has ordered 300 cars from the Bettendorf Co. The Erie is in the market for 35 Mikado type locomotives, the Baltimore & Ohio for 50 of the same type, the St. Louis Southwestern for 15 consolidation type and the Seaboard Air Line for 6 Mikado type engines. It is reported that the Illinois Central will buy 50 additional locomotives. The Gulf Coast Lines are inquiring for 500 box and 500 gondola cars.

Sheets.—Both of the local producers remain out of the market, and Eastern mills are in a position to take less new business than was expected in view of the curtailment of automobile production. Black and blue annealed are easier to obtain in the heavier gages, light gages still being exceedingly scarce. The situation in galvanized is unchanged. Locally the production of the leading independent is improving, 16 out of 18 mills having been in operation throughout the past week.

Mill quotations are 4.35c. to 8c. for No. 28 black; 3.55c. to 6.50c. for No. 10 blue annealed, and 5.70c. to 9c. for No. 28 galvanized, these all being Pittsburgh prices, subject to a freight to Chicago of 27c. per 100 lb., which will be advanced to 38c. Aug. 26. The lowest prices are those of March 21, 1919.

Jobbers quote: Chicago delivery out of stock, No. 10 blue annealed, 6.02c. to 7.13c.; No. 28 black, 7c. to 8.10c.; No. 28 galvanized, 8.50c. to 9.60c.

Wire Products.—Although it is felt that production is gradually creeping up on demand, the shortage of wire products, particularly nails, continues acute. Small railroad spikes are also much sought after. The leading interest has issued a new card on extras but at former base price. The new extras have been readjusted to conform more closely to the relative costs of different sizes, some of the former differentials having been out of line. For mill prices, see Finished Iron and Steel, Pittsburgh, page 551.

Rails and Track Supplies.—The demand for track accessories is still active and requests for rails for 1921 delivery continue to be received by the leading interest, pending its decision on prices. This mill is booking a good volume of business in tie plates for indefinite delivery, and is accepting orders for specific shipment in light rails, bolts, spikes and angle bars. New commitments in light rails are about equal to shipments.

Standard Bessemer rails, \$45 to \$55; open hearth rails, \$47 to \$57. Light rails, 2.45c. to 3.50c. f.o.b. makers' mills.

Standard railroad spikes, 3.55c. to 4.25c., Pittsburgh. Track bolts with square nuts, 4.60c. to 5.25c., Pittsburgh. Steel tie plates, 3c. to 4c., and steel angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 3.75c. to 4c., f.o.b. makers' mills.

Cast Iron Pipe.—The market is without features.

We quote per net ton f.o.b. Chicago, ex-war tax as follows: water pipe, 4-in., \$82.10; 6-in. and above, \$79.10; class A and gas pipe, \$2 extra.

Bolts and Nuts.—Manufacturers are receiving requests to hold up shipments rather than definite cancellations from some of the automobile companies. Cancellations would be preferred, as inquiry is heavy from implement manufacturers, sheet metal shops and tank makers, and motor companies' reservations could be readily translated into new business. Bolt manufacturers are heavily booked and find it difficult to add to their commitments. Jobbers are expected to raise their prices shortly to cover the freight advance. For mill prices see page 551.

Jobbers quote structural rivets, 5.62c., boiler rivets, 5.72c.; machine bolts up to $\frac{3}{8}$ x 4 in., 20 per cent off; larger sizes, 10 off; carriage bolts up to $\frac{3}{8}$ x 6 in., 10 off; larger sizes, 5 off; hot pressed nuts, square tapped and hexagon tapped, list price; coach or lag screws, gimlet points, square heads, 30 per cent off. Quantity extras are unchanged.

Old Material.—The freight advance has aroused considerable speculation as to the future relationship of the various scrap centers. It is generally believed that the increased rates to Cleveland, Pittsburgh and other points East of here will result in more scrap gravitating to Chicago and a reduction in shipments from this market to those centers. This district provides more scrap than it consumes and the divergence between output and consumption will no doubt be accentuated. In Eastern markets like Pittsburgh, which consume more than they produce, a sharp demand will tend to force prices to a point where the increased freight can be absorbed, but it is unlikely that circumstances will warrant such action except in extreme cases. The current market is fairly strong in some departments and dull in others. A prominent steel interest has bought several thousand tons of heavy melting at \$26 per gross ton. Further purchases of rerolling

ing rails have been made at a maximum of \$30 per gross ton, and rerolling grades are beginning to move in moderate volume. A local consumer has made further purchases of malleable and is still in the market. Railroads offering material include the Rock Island 3500 tons, the Chicago & Alton and the Chicago Great Western 500 tons each, and the Michigan Central a blind list.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

	Per Gross Ton
Iron rails	\$36.00 to \$37.00
Reelaying rails	37.50 to 62.00
Car wheels	39.00 to 49.50
Steel rails, rerolling	38.00 to 39.00
Steel rails, less than 3 ft.	29.50 to 30.00
Heavy melting steel	25.50 to 26.00
Frogs, switches and guards, cut part	25.50 to 26.00
Shoveling steel	25.00 to 25.50
Low phosph. heavy melting steel	30.00 to 30.50
Drop forge flashings	21.50 to 22.00

	Per Net Ton
Iron angles and splice bars	\$34.00 to \$34.50
Steel angle bars	25.50 to 26.00
Iron arch bars and transoms	34.50 to 35.00
Iron car axles	41.50 to 42.00
Steel car axles	45.50 to 36.00
No. 1 busheling	20.50 to 21.00
No. 2 busheling	12.50 to 13.00
Cut forge	24.00 to 24.50
Pipes and flues	17.00 to 17.50
No. 1 railroad wrought	24.50 to 25.00
No. 2 railroad wrought	24.00 to 24.50
Steel knuckles and couplers	26.00 to 26.50
Coil springs	28.00 to 28.50
No. 1 cast	36.00 to 36.50
Boiler punchings	27.50 to 28.00
Locomotive tires, smooth	24.00 to 24.50
Machine shop turnings	9.50 to 10.00
Cast borings	13.50 to 14.00
Stove plate	28.50 to 29.00
Grate bars	29.00 to 30.00
Brake shoes	26.50 to 27.00
Railroad malleable	28.50 to 29.00
Agricultural malleable	28.00 to 28.50
Country mixed	17.00 to 18.00

Boston

BOSTON, Aug. 24.

Pig Iron.—Business in the past week was again largely confined to Sloss iron on a \$42 furnace base. One Pennsylvania furnace sold between 500 and 600 tons, silicon 1.75 to 2.25 and silicon 2.25 to 2.75, fourth quarter shipment, at \$50 and \$51.25 furnace, on an adjustment basis; a few cars of Virginia No. 2 X, prompt shipment, sold at \$52, and 100 tons of Lake charcoal, fourth quarter delivery, sold at \$55 furnace base. Of Sloss iron approximately 3000 tons for last half and first quarter changed hands; Connecticut consumers took less than 1000 tons, largely silicon 2.75 to 3.25 and silicon 2.25 to 2.75, the remainder going to Massachusetts melters, including one lot of 800 tons No. 2 X to a middle state foundry and 600 tons, same analysis, to a Bridgewater melter. It is intimated that this make of iron will be advanced to \$45 furnace base within the immediate future. Delivered pig iron prices, figured on the new freight rate schedule, follow:

East. Penn., sil. 2.25 to 2.75	\$55.31 to \$56.06
East. Penn., sil. 1.75 to 2.25	54.06
*Buffalo, sil. 2.25 to 2.75	55.71 to 56.71
*Buffalo, sil. 1.75 to 2.25	54.46 to 55.46
Virginia sil. 2.75 to 3.25	53.27
Virginia sil. 2.25 to 2.75	57.52
Virginia sil. 1.75 to 2.25	56.27
Alabama sil. 2.75 to 3.25	51.63 to 55.67
Alabama sil. 2.25 to 2.75	49.88 to 53.92
Alabama sil. 1.75 to 2.25	48.63 to 52.67

*Nominal.

Coal and Coke.—The easing of the Connellsville market has resulted in some buying of coke by New England foundries at \$19 and \$19.50 per net ton, that shipping point, or \$23.40 and \$23.90 delivered. New England foundry coke producers have not changed their prices, the Everett concern still quoting on a \$21.90 delivered base where the freight rate does not exceed \$2.40. Both the Everett company and the Providence Gas Co. are doing a little better in the matter of shipments. Spot steam coal is steady on a basis of \$10 to \$13 a ton at the mines, with the supply slightly in excess of immediate requirements owing to curtailment in New England mill industries. A Pawtucket, R. I., mill, with a surplus, is offering the fuel by negotiation.

Warehouse Business.—Local warehouses have not benefited by increased mill shipments. One concern, since last reports, received four or five cars of odd sizes bought from the Government in the Middle West, but others have been less fortunate. Round bars are especially scarce, the market being bare of $\frac{3}{8}$ -in., $\frac{5}{8}$ -in. and $\frac{7}{8}$ -in. stock, and of band steel as well. The general belief is that local iron and steel stocks never before were as depleted as they are to-day. One house, formerly on a 5 $\frac{1}{2}$ c. per lb. base has advanced to 6c. and others intimate they will do the same this week. Jobbers have advanced h. p. nuts from list plus 3c. to list plus 4c. per lb. and c. p. c. and t. from list plus 4c. to list plus 5c. Some houses have advanced nail prices to conform with new freight rates.

Jobbers quote: Soft steel bars, \$5.50 to \$6.50 per 100 lb. base; flats, \$6.50 to \$6.85; concrete bars, \$6 to \$6.50; tire steel, \$7 to \$7.50; spring steel, open hearth, \$11; crucible, \$16; steel bands, \$8 to \$8.25; steel hoops, \$9; toe talk steel, \$8; cold-rolled steel, \$10 to \$10.50; structural, \$6 to \$6.50; plates, \$6.50; No. 10 blue annealed sheets, \$9; No. 28 black sheets, \$9.15; No. 28 galvanized, \$10.50; refined iron, \$5.50 to \$8; best refined, \$7 to \$7.50; Wayne, \$8.50; band iron, \$8; hoop iron, \$9; Norway iron, \$20.

Old Material.—Activity centers in No. 1 heavy melting steel and No. 1 machinery cast. Heavy buying of the latter by New England foundries has advanced the market fully \$3 a ton. Several hundred tons have been taken on a \$47 delivered base, and car lots at \$47.25. One dealer paid \$42 shipping point for a car of mixed No. 1 and No. 2 cast, and a Boston & Maine Railroad point foundry took two cars of New York State cast, which because of the large content of manhole covers, etc., graded hardly better than No. 2, at \$45 delivered. No. 2 cast, however, continues a drug on the market, and while prices are higher they are only sentimentally so. Stove plate has advanced approximately \$2 in sympathy with No. 1 cast, sales on a \$30 delivered base being reported, but transactions are limited. A considerable tonnage of No. 1 heavy melting steel has been bought for Pittsburgh district mill consumption on a \$28 delivered base, and dealers predict the market will be \$2 higher within a few days. Buying for the Pittsburgh account has overshadowed the local export market, but continued buying of heavy steel on a \$20.50 shipping point base has featured the market. The old material market otherwise is without special feature, business being quiet and prices firm and unchanged. Old material prices as quoted at the local yards follow:

No. 1 heavy melting steel	\$20.50 to \$23.50
No. 1 railroad wrought	28.50 to 29.00
No. 1 yard wrought	23.00 to 24.00
Wrought pipe (1-in. in diameter, over 2 ft. long)	18.50 to 19.50
Machine shop turnings	13.50 to 14.50
Cast iron borings	15.50 to 16.50
Heavy axle turnings	15.00 to 16.50
Blast furnace borings and turnings	13.50 to 14.00
Forged scrap	13.00 to 14.00
Bundled skeleton	13.00 to 14.00
Street car axles	31.00 to 32.00
Car wheels	37.00 to 38.00
Machinery cast	43.00 to 44.00
No. 2 cast	39.00 to 40.00
Stove plate	26.50 to 27.50
Railroad malleable	28.00 to 29.00
Rerolling rails	28.00 to 30.00

St. Louis

ST. LOUIS, Aug. 23.

Pig Iron.—Relatively little business is being done in pig iron, practically all of the transactions being in odd lots bought by foundries for immediate delivery for various special reasons. Contracting for the future is light, buyers and sellers appearing uncertain as to the course to pursue because of the increased freight rates and their applications to costs of production. Furnace representatives, quite generally, are holding off their principals, having withdrawn from the market in numerous cases until the situation clears. There is, however, some tentative inquiry appearing for last quarter and also first and second quarters, but no quotations are being made. As to immediate business, foundries report that much more could be done if there were molders obtainable, but men are scarce and output

is reduced. Pig iron is placed mostly on a basis of \$44 to \$46, Birmingham, for No. 2 Southern.

Coke.—Coke continues practically unobtainable and the price is whatever can be realized. One sale of a carload being reported at \$25 per ton, spot delivery. No by-product coke is obtainable from the local plant or near-by sources.

Finished Iron and Steel.—Finished products show no particular change from the recent past, although there continues to be some improvement in the receipts on existing contracts. No new business, however, is being placed and there is no change in prices by the larger interest, although smaller independent companies are still reported as making some deliveries in payment of premiums. Movement out of warehouse continues up to the volume of receipts.

For stock out of warehouses we quote as follows: Soft steel bars, 3.94c.; iron bars, 4.50c.; structural material, 4.04c.; tank plates, 4.24c.; No. 10 blue annealed sheets, 7.09c.; No. 28 black annealed sheets, cold rolled, one pass, 8.10c.; No. 28 black galvanized sheets, black sheet gage, 9.60c.

Old Material.—Conditions are about the same as a week ago. Operations are localized and dealers are in the main rather bullish, chiefly on account of the local situation, although somewhat influenced, naturally, by a stiffness at Pittsburgh and elsewhere. Local industries are taking in such scrap as they need for immediate use, but are not making any heavy purchases for future delivery.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district, as follows:

Per Gross Ton

Old iron rails	\$32.50 to \$33.00
Old steel rails, rerolling	35.00 to 35.50
Old steel rails, less than 3 ft.	25.00 to 25.50
Relaying rails, standard sections subject to inspection	50.00 to 55.00
Old car wheels	36.00 to 36.50
No. 1 railroad heavy melting steel	24.00 to 24.50
Heavy shoveling steel	22.00 to 22.50
Ordinary shoveling steel	21.50 to 22.00
Frogs, switches and guards, cut apart	26.00 to 26.50
Ordinary bundled sheets	12.00 to 12.50

Per Net Ton

Heavy axles and tire turnings	\$15.00 to \$15.50
Iron angle bars	31.00 to 31.50
Steel angle bars	23.00 to 23.50
Iron car axles	40.50 to 41.00
Steel car axles	34.00 to 34.50
Wrought arch bars and transoms	33.00 to 33.50
No. 1 railroad wrought	25.00 to 25.50
No. 2 railroad wrought	23.00 to 23.50
Railroad springs	24.00 to 24.50
Steel couplers and knuckles	24.00 to 24.50
Locomotive tires, 42 in. and over, smooth inside	21.00 to 21.50
Cast-iron borings	14.50 to 15.00
No. 1 busheling	20.00 to 20.50
No. 1 boiler, cut to sheets and rings	17.00 to 17.50
No. 1 railroad cast	35.00 to 35.50
Stove plate and light cast	26.50 to 27.00
Railroad malleable	27.00 to 27.50
Agricultural malleable	25.50 to 26.00
Pipes and flues	17.50 to 18.00
Heavy railroad sheet and tank	15.00 to 15.50
Railroad grate gars	26.50 to 27.00
Machine-shop turnings	10.50 to 11.00
Country mixed	20.50 to 21.00
Uncut railroad mixed	21.50 to 22.00
Horseshoes	25.50 to 26.00
Brake shoes	24.00 to 24.50

Buffalo

BUFFALO, Aug. 24.

Pig Iron.—There have been no important transactions. One sale on a \$52 base was reported, for prompt delivery, but all others have been on the \$50 base. Some of the latter sales were for last half delivery and others for first quarter and first half. Makers are not particularly eager to make 1921 quotations, preferring to devote their entire time and energies to getting contract deliveries. There is no disposition to quote for future delivery below the \$50 base, and there is little future selling. The car supply showed slight improvement but deliveries are still a big problem. The coke shortage is still acute and is having its effect on the trade. The general attitude is one of marking time, while making every effort to meet the heavy pressure for delivery on old contracts.

We quote f.o.b. Buffalo:

No. 1 foundry, 2.75 to 3.25 sif.	\$52.00 to \$53.00
No. 2 X foundry, 2.25 to 2.75 sif.	50.25 to 51.25
No. 2 plain, 1.75 to 2.25 sif.	49.00 to 50.00
Basic	48.50
Malleable	51.25
Lake Superior charcoal	58.00 to 60.00

Finished Iron and Steel.—Buying by the railroads was indicated by inquiries from these sources, strengthening the demand for sheets and other materials. The car shortage continues to be a serious factor and many mills are insisting that contracts specify delivery dependent upon ability to obtain cars. Inquiries for shapes is slightly increased but is for small tonnage generally. Inquiry for bars and cold finished is generally for carload lots and less.

Jobbers quote the following prices for this territory: Steel bars, 4.61c.; iron bars, 5.26c.; structural, 4.46c.; plates, 4.66c.; No. 10 blue annealed sheets, 6.51c.; No. 28 black sheets, 8.25c.; No. 28 galvanized sheets, 9.50c.; bands, 5.81c.; hoops, 6.06c.; cold rolled steel, 6c.

Old Material.—A sharply increased Pittsburgh demand for heavy melting steel was a feature of the week's trading. Midweek offers of \$28.50 were increased later in the week to \$29, f.o.b. Pittsburgh, but sales at this figure were not reported. Uncertainties of shipping are retarding sales. Demand seems to be from out of town mills rather than from those in the Buffalo district, which are not seeking active buying just yet. Dealers were making a final effort to make contract deliveries before the freight increases and there were practically no sales of consequence in the week.

We quote dealers' asking prices per gross ton, f.o.b. Buffalo as follows:

Heavy melting steel, regular grades	\$25.00 to \$26.00
Hydraulic compressed	23.00 to 23.50
Low phos., 0.04 and under	31.50 to 32.50
No. 1 railroad wrought	30.50 to 31.50
No. 1 machinery cast	37.50 to 38.50
Iron and steel axles	42.00 to 43.00
Car wheels	37.00 to 38.00
Railroad malleable	39.50 to 31.50
Machine-shop turnings	15.00 to 16.00
Heavy axle turnings	19.50 to 20.50
Clean cast borings	19.50 to 20.00
Iron rail	29.50 to 30.50
Locomotive grate bars	23.50 to 24.50
Stove plate	31.50 to 32.50
Wrought pipe	20.50 to 21.50
No. 1 busheling	19.50 to 20.50
Bundled sheet stampings	16.50 to 17.50

Cincinnati

CINCINNATI, Aug. 24.

Pig Iron.—The market is dull and sales are mostly for tonnages ranging from a carload to 300 tons. Buying for first half, which had been fairly good for the past three weeks, has quieted down, and there is no disposition on the part of furnaces, with the possible exception of two in the South, to solicit business for next year. With improving transportation conditions melters in this territory who have not covered for last quarter are getting better shipments on contracts, and are remaining out of the market in the belief that they will have enough iron, with that purchased for fill-in purposes, to carry them through the year. According to some sellers this partly accounts for the dullness in the local market. Prices on all grades cover a wide range. Northern iron for prompt delivery has sold in small lots at \$50, furnace, and for first half of next year at \$45 to \$47, with a round tonnage going at the latter figure to a melter who insisted on being taken care of. On Southern iron prices quoted are from \$42 to \$45, sales having been made at both figures. For prompt delivery a Southern furnace is offering iron at \$44, furnace, and for last quarter another has a small tonnage available at \$45. At least three furnaces however are still quoting \$42 for last quarter, and one of these has prompt iron available at the same figure. A local agency reports a sale of several hundred tons of Southern iron, silicon 2.25 to 2.75 per cent, at \$46.25, Birmingham, for prompt delivery. This is the highest price reported on Southern iron for any considerable tonnage, though sales of carload lots had previously been made at this figure. Other sales include one of 800 tons, silicon 3.75 to 4.25, at \$49.15, Birmingham, the furnace in this instance figuring its differentials for silicon content on a 4 per cent basis. A nearby melter took 500 tons of Southern iron at \$42 base. A southern Ohio furnace sold 500 tons to a regular customer at \$46, furnace, for nearby delivery. A sale of Bessemer iron for shipment to the Pittsburgh district is reported at \$49, furnace. Few inquiries are before the trade, and a Central Ohio melter who was in the mar-

ket for about 5000 tons of malleable iron has decided to postpone purchasing for a few weeks. New freight rates effective Aug. 26 will add 90c. a ton to Southern iron delivered in Cincinnati and 72c. from the Ironton district.

Based on freight rates of \$3.60 from Birmingham and \$1.80 from Ironton, we quote f.o.b. Cincinnati:	
Southern coke, sil. 1.75 to 2.25 (base price)	\$46.50 to \$47.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	47.75 to 48.75
Ohio silvery, 8 per cent sil.	62.50
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	48.50 to 49.50
Basic Northern	48.50
Malleable	48.50 to 49.50

Finished Iron and Steel.—Great improvement is noticed in transportation conditions, and steel is now coming in from Pittsburgh and Valley mills in quantities sufficient to take care of manufacturers' requirements. The exception is possibly small steel bars, of which there is still a great scarcity. The demand for all kinds of finished iron and steel continues steady, and sheet mills operating in this territory are reported to have very little tonnage available for the remainder of the year. The Newport Rolling Mills, which had been down over a month for repairs and adjustments of wage scales, is now running to full capacity, as is the American Rolling Mills at Middletown and the mills of the Whitaker-Glessner Co. at Portsmouth. Inquiry for shapes and plates is quiet, the only sizable ones being between 500 and 600 tons for bridge replacements for the Big Four Railroad, about 250 tons for a foundry building for the New Idea Spreader Co. at Coldwater, Ohio, and a small tonnage for an addition to the Pollak Steel Co.'s Chicago plant. Plans for a new bridge over the Ohio River to be built by the Baltimore & Ohio near Lawrenceburg, Ind., have been approved, and bids will be asked shortly. Warehouses report business good, and with shipments increasing from mills they are in a better position to care for the trade. The old rate on shipments from the Pittsburgh district to Cincinnati was 23½c. per 100 lb., and after Aug. 26 this will be increased to 33c. per 100 lb. None of the local warehouses have added the increased rate to their quotations, but will do so on steel arriving after that date.

Iron and steel bars, 5c. to 6c.; structural shapes, 4.50c.; plates, 4.50c.; cold rolled shafting, 6.25c.; steel bands, 6.50c.; No. 10 blue annealed sheets, 7.50c.; No. 28 black sheets, 9 to 10c.; No. 28 galvanized sheets, 10c. to 11c.; wire nails \$4.50 per keg base.

Coke.—The demand for spot coke has fallen off, and foundries in this district now have a fair supply on hand. A tendency toward lower prices is noted, Connellsville foundry coke, which a week ago was quoted at \$19.50 per net ton now being available at \$18.50. Movement of coke is reported freer than for some months past. New freight rates effective Aug. 26 will increase the delivered price of Connellsville coke from \$2.80 to \$3.92 per ton.

Old Material.—No change is reported in the scrap market, which can be characterized as dull. Some inquiries are being received for heavy melting steel from the Pittsburgh district, and small sales are reported at \$28, delivered. Some sales of cast scrap to local foundries are reported. On account of the difficulty of securing cars local dealers are not buying, their yards being pretty heavily stocked. The Norfolk & Western Railroad is offering a small tonnage.

We quote dealers' buying prices:

	Per Gross Ton
Bundled sheets	\$14.00 to \$15.00
Old iron rails	27.00 to 28.00
Relaying rails, 50 lb. and up	50.00 to 51.00
Rerolling steel rails	32.00 to 33.00
Heavy melting steel	22.50 to 23.50
Steel rails for melting	24.00 to 25.00
Car wheels	36.00 to 37.00

	Per Net Ton
No. 1 railroad wrought	\$25.00 to \$26.00
Cast borings	11.00 to 11.50
Steel turnings	9.50 to 10.00
Railroad cast	32.00 to 33.00
No. 1 machinery	35.00 to 36.00
Burnt scrap	22.00 to 23.00
Iron axles	36.50 to 37.00
Locomotive tires (smooth inside)	24.50 to 25.50
Pipes and flues	16.00 to 16.50
Malleable cast	24.00 to 24.50
Railroad tank and sheet	16.00 to 16.50

New York

NEW YORK, Aug. 24.

Pig Iron.—Many Eastern consumers of foundry pig iron have considerable iron due them on contracts, and deliveries will not only run through the remainder of the year, but in a good many cases will carry over into 1921. Naturally, such buyers are not likely to make new commitments just now at the high prices asked. Current sales are of scattering lots, occasionally up to 500 tons, required by companies whose regularly contracted iron cannot get to them under present railroad conditions. Buying for 1921 is relatively unimportant and sellers do not look for any large business in the near future. Buffalo, Eastern Pennsylvania and Virginia irons are for the most part on the \$50 basis, but some sales of Virginia iron for next year are reported at \$48, at furnace. An export inquiry for 750 tons of Bessemer iron has come up, and an Elizabeth, N. J., melter is in the market for 750 tons of foundry iron for this year. Several consumers have asked for prices for first quarter or first half of 1921, but with no great show of expectation to cover. Under the advanced freights effective on Thursday the rate from Eastern Pennsylvania to this market, which has been \$1.80, becomes \$2.52. The Buffalo rate of \$3.90 becomes \$5.46. The quotations below are based on the rates in effect on Aug. 24:

We quote for early delivery in the New York district as follows:

East. Pa., No. 1 fdy., sil. 2.75 to 3.25.	\$53.80 to \$54.80
East. Pa., No. 2X fdy., sil. 2.25 to 2.75.	52.05 to 53.05
East. Pa., No. 2 fdy., sil. 1.75 to 2.25.	50.80 to 51.80
Buffalo, sil. 1.75 to 2.25.....	51.90 to 53.90
No. 2 Virginia, sil. 1.75 to 2.25.....	52.40 to 54.40

Ferroalloys.—Some British producers of ferromanganese have reduced their quotations and are now offering the alloy at \$170, seaboard, for delivery into June, 1921. Some light sales have been made at this level. Some American producers have met this reduction and it is probable that the price will soon be general, if it is not so already. Cable advices to THE IRON AGE this week also state that the British market is easier, but without any change thus far in prices. Demand here is confined to small lots for early delivery, and it is believed that spot material could be obtained as low as \$170, although this price has not yet been established for this position. The spiegeleisen market is strong at \$80 to \$85, furnace, but demand is light. There have been sales of small lots and there are a few moderate inquiries before the market. The manganese ore market is easier with offerings of Indian ore at 65c. per unit, seaboard, which compares with 70c. to 75c. previously, and an unwillingness by consumers heretofore to pay more than 70c. The 50 per cent ferrosilicon market is quiet and confined to small transactions which are generally done at \$80 to \$85 per ton, delivered.

Finished Iron and Steel.—There is a slight improvement in inquiry for structural material. Two jobs of fair size in the market are 3000 tons for an office building at Hartford, Conn., to be built by the Travelers Insurance Co., and a highway bridge over the Piscataqua River at Portsmouth, N. H., requiring 2500 tons. Smaller jobs up for bids include 160 tons for a bridge for the Boston & Maine Railroad; 160 tons for a bridge for the Central Railroad of New Jersey; 300 tons for remodeling the Hotel Plaza, New York. The American Bridge Co. will fabricate 300 tons for an addition to the Hearn department store, New York, and the Shoemaker-Satterthwait Bridge Co. has been awarded 250 tons for the Potomac Poultry Food Co., Crisfield, Md. F. L. Hughes & Co., Rochester, N. Y., will erect 1200 tons for the Eastman School of Music, Rochester. Plain structural material is obtainable in 30 to 60 days at 3.10c. Pittsburgh basis, though another case of a large attractive order is learned of going at 3.05c. Any business at 3c. would apparently be for the favored customer, with delivery not very definite. The plate market remains stiff at 3.25c., one mill recently refusing

an attractive offer of 5000 tons of ship plates for England for the last quarter at this figure, though the mill has named this price, but on a still more attractive offering from the mill standpoint. Little booking is being done in steel bars, largely because of the sold-up condition of the mills, and 3.75c., Pittsburgh, appears to be the minimum except in such a case as a large tonnage from an important buyer, involving a few sizes.

We quote for mill shipments, New York, as follows: Soft steel bars, 2.62c. to 4.27c.; shapes, 2.72c. to 3.52c.; plates, 2.92c. to 3.77c., the minimum prices being for indefinite delivery and the highest prices for delivery in a few weeks; bar iron, flats, wider than 6 in., 5.27c., with half extras; light rounds, squares and flats, 5.77c. to 6.27c. with full extras, and other sizes, 4.77c. with half extras.

Warehouse Business.—Prices remain unchanged but a general increase will be made about Sept. 1. A large independent warehouse will probably add about 11c. per 100 lb. to present quotations, while others expect to add about 10c. per 100 lb. to present prices to meet the increased freight rates. On material that has been showing a tendency to soften, such as plates and structural steel, there will probably be no increase. Pipe is expected to advance about 2 points. Although much improved, shipments are still uncertain and difficult to make. We quote prices on page 568.

High Speed Steel.—We quote 18 per cent tungsten domestic high speed steel at \$1.25 to \$1.30 per lb., New York. The market is inactive.

Cast Iron Pipe.—No large jobs are up for bids, but there is a fair amount of private inquiry for small lots. The new freight rates, in effect Thursday, will mean an advance of 90 cents to \$1 a ton at New York, as pipe foundries quote prices f. o. b. their works. For delivery on and after Aug. 26 we quote 6-in. and heavier at \$77.22, New York; 4-in., \$80.22, with \$2 additional for Class A and gas pipe.

Old Material.—There is a division of opinion in the scrap trade as to whether the advance in freight rates, effective Aug. 26, will be absorbed by the consumers or producers of scrap. Some scrap brokers have offered lower prices at point of shipment to producers, but in all cases have not been successful in getting shippers to accept these prices. Many shippers believe that the freight rates will result in higher prices, or at least that they will not be obliged to make concessions, and they are holding their material accordingly. The present is largely a waiting market. Developments may be expected as soon as the trade has had time to adjust itself to the new level of freight rates. A contrast exists in the prices paid for heavy melting steel. On old orders for shipmet to Eastern Pennsylvania about \$19.50 to \$20.50 is being paid, whereas on steel for Munhall, Pa., and other points in the Pittsburgh district from \$23 to \$24 is offered. We quote prices as follows:

Buying prices per gross ton, New York, follow:

Heavy melting steel.....	\$23.00 to \$24.00
Rerolling rails	35.50 to 36.00
Relaying rails, nominal.....	54.00 to 55.00
Steel car axles.....	39.00 to 40.00
Iron car axles.....	44.00 to 45.00
No. 1 railroad wrought.....	30.00 to 31.00
Wrought iron track.....	24.00 to 25.00
Forge fire	14.00 to 14.50
No. 1 yard wrought long.....	26.00 to 27.00
Light iron	9.00 to 10.00
Cast borings (clean).....	17.00 to 17.50
Maching-shop turnings	15.00 to 15.50
Mixed borings and turnings.....	14.00 to 14.50
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	19.50 to 20.00
Stove plate	26.00 to 27.00
Locomotive grate bars.....	27.00 to 28.00
Malleable cast (railroad).....	30.00 to 31.00
Old car wheels.....	40.00 to 41.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton:

No. 1 machinery cast.....	41.00 to 42.00
No. 1 heavy cast (columns, building materials, etc.), cupola size.....	40.00 to 41.00
No. 1 heavy cast, not cupola size.....	32.00 to 33.00
No. 2 cast (radiators, cast boilers, etc.)	29.00 to 30.00

Birmingham

BIRMINGHAM, ALA., Aug. 23.

Pig Iron.—The larger foundry iron producers of Birmingham have made large sales of pig iron regularly since July 1 and there is no indication of a diminution in this business. The major portion of the tonnage is for first quarter of 1921 with considerable for the last quarter of this year, but quite a number of consumers have covered their requirements through the first half of 1921. One large company admits a record business during the six weeks following July 1. Its bookings for that period are understood to be in excess of 100,000 tons with the last two weeks of August unreported, but likely to roll up about 50,000 tons more. All Alabama sales since July 1 to the middle of August have amounted to more than 250,000 tons. The past week was as active as any of its six predecessors. Practically every territory where Southern iron is used at all has participated in the movement. It has extended from Pittsburgh to Philadelphia and Boston and from Chicago and Cincinnati to Michigan and the Far West besides liberal buying in the South, where the melting of iron is the largest on record and growing almost weekly. Much interest attaches to the new schedule of silicon differentials, understood to have been announced by a strong foundry iron interest and reported by other makers to have been encountered in competitive bidding. This new schedule is said to be an advance of \$1.25 over the \$42 base for silicon 2.25 to 2.75 per cent and 50c. thereafter for each 50 points of silicon. This is below the Government schedule and still further below that in vogue by other Birmingham interests. It would make 2.75 to 3.25 per cent silicon bring \$44.25 compared with \$45 charged under the Government schedule. Lots sold have run from 25 tons to 3000 with many orders of the latter amount booked. Inquiry is good and the market strong. Large makers stick uniformly to the \$42 base, but some smaller ones are now on a base of \$44 and selling spot regularly at that figure.

We quote per gross ton f.o.b. Birmingham district furnaces, the Tennessee company excepted, as follows:

Foundry, sil. 1.75 to 2.25.....	\$42.00
Basic	41.00
Charcoal	\$58.00 to 60.00

Cast Iron Pipe.—The Sloss-Sheffield Steel & Iron Co. has ordered 25,000 feet of 16-in. gas main of the United States Cast Iron Pipe & Foundry Co., and the city of Hartsville, S. C., has ordered 3 miles of 6-in. high pressure pipe. Pipe makers report an active week from the purchasing end. Sanitary pipe shops say the demand for heavy pipe for city use is not as great as that for standard pipe and fittings which are used in the small towns and the country trade. All shops appear to be busy. The price schedule remains at \$73 for 4-inch and \$70 for 6-in. and upward.

Coal and Coke.—The coke situation continues acute with practically none leaving the district. Local industries manage to be supplied. Standard foundry coke brings \$13.50 to \$15, spot. The Alabama By-Products Co. is the largest present producer of foundry coke. Furnace coke brings \$10 and \$11.

Old Material.—The market is active with much scrap moving and higher prices paid for several grades, especially steel. Some dealers will not sell at present prices at which heavy steel moves. No. 1 cast is very active.

We quote per gross ton f.o.b. Birmingham district yards, prices to consumers, as follows:

Old steel rails.....	\$23.50 to \$24.50
No. 1 steel.....	22.50 to 23.50
No. 1 cast.....	35.00 to 36.00
Car wheels	34.00 to 35.00
Tramcar wheels	33.00 to 34.00
No. 1 wrought.....	28.00 to 29.00
Stove plate	26.00 to 27.00
Cast iron borings.....	13.00 to 14.00
Machine shop turnings.....	13.00 to 14.00

Cleveland

CLEVELAND, Aug. 24.

Iron Ore.—The ore movement is better than at any previous time this season. Coal for shipment to the Northwest is moving more freely with a corresponding increase in the car supply for ore. With the better dispatch of ore an average of only about 50 boats is now being held at Lake Erie ports waiting to unload, as compared with 75 or more cargoes a few weeks ago, so that the delays at the unloading points are shorter. Some consumers recently increased their shipping orders in order to get as much ore on their yards as possible before the advance in freight rates, but these requests for larger shipments were mostly from small interests. Other consumers, with the limitation in the car supply, have been taking about all the ore they could obtain.

We quote delivered lower Lake ports: Old range Bessemer, \$7.45; old range non-Bessemer, \$6.70; Mesaba Bessemer, \$7.20; Mesaba non-Bessemer, \$6.55.

Pig Iron.—Some pig iron is still being sold for the first half of next year, but inquiry for that delivery has fallen off. One interest which has been taking first half contracts for some time reports sales in the week aggregating only 2000 tons, these sales being made at \$46 and \$47 for No. 2 foundry. A Cleveland furnace that recently began taking first half contracts for foundry iron at \$46 has advanced its prices to \$47. This company has sold approximately 10,000 tons of iron at \$46 for foundry and \$46.50 for malleable iron. Prices on foundry iron for this year's shipment range from \$48 to \$50. A Valley furnace made several small lot sales in the week in the Pittsburgh district at \$50. Another Valley furnace is quoting \$49 and another producer is asking \$48. No local iron is being offered for this year's delivery, but probably none could be had for local delivery under \$50. There has been some activity recently in Southern iron for prompt shipment, which can now be purchased at about the same delivered prices as Northern iron. Southern iron is still quoted at \$42 base, at furnace, for the remainder of the year and the first half. One of the largest automobile interests has suspended pig iron shipments to its various plants for 30 days. With the advance in freight rates Aug. 26, a 40 per cent advance will be made on local switching charges, making these 42c. and 56c.

We quote delivered Cleveland as follows, based on the new freight rates, these being a 56c switching charge for local iron, a \$1.96 freight rate from Valley points, a \$3.36 rate from Jackson and \$6.67 from Birmingham.

Basic	\$49.06
Northern No. 2 fdry, sil. 1.75 to 2.25.....	50.56
Southern fdry., sil. 2.25 to 2.75.....	49.92
Ohio silvery sil. 8 per cent.....	63.36
Standard low phos. Valley furnace.....	\$56.00 to 57.00

Coke.—The coke market is somewhat easier, but inactive. A sale of furnace coke for prompt shipment is reported at \$17.25. Quotations on early shipment foundry coke range from \$16 to \$20.

Finished Iron and Steel.—The demand for finished iron and steel generally is light and the trade is wondering whether the railroads will come into the market and take up the slack caused by the cancellation of steel by the automobile industry. Late reports indicate that Detroit automobile manufacturers are operating their plants at 50 per cent capacity, except two of the largest plants which are running full. Some agricultural implement plants are as busy as ever, but others have canceled steel on which they were unable to secure shipments in time for use in making this season's product. Fabricators do not look for much revival of building activity this year. The plate market is firm, with 3.50c. as the ruling quotation, although prices range from 3.25c. to 4c. There is still a spread from 3c. to 4c. on quotations by independent mills on steel bars. Some new inquiry for sheet bars for the fourth quarter has developed.

Sheets.—Manufacturers in other lines are absorbing the surplus production in automobile body sheets not required by the automobile industry and these sheets

have been allocated for the fourth quarter at 7.85c., the price that has prevailed during the present quarter. Other grades of sheets are in fair demand. Blue annealed sheets in heavier gages are quoted at 5.50c., but the lighter gages are selling at 6c. to 6.25c. Independent makers quote black sheets at 6.50c. to 7c. and galvanized sheets at 7.20c. to 7.50c.

Warehouse Business.—There will be no advance in present maximum warehouse prices on steel products, as jobbers will absorb the advance in freight rates. The Carnegie Steel Co., which is quoting the minimum warehouse prices, has as yet made no announcement as to whether it will advance its prices. Warehouse business is fair, the demand being most active for small bars.

Cleveland warehouses quote steel bars at 3.27c. to 5c.; plates, 3.57c. to 4.50c., and structural material, 3.37c. to 4.50c.; No. 9 galvanized wire, 4.70c.; No. 9 annealed wire, 4c.; No. 28 black sheets, 8.50c.; No. 28 galvanized, 9.50c.

Bolts and Nuts.—With increased cost of production due to the advance in freight rates, some of the local bolt and nut manufacturers are considering price advances, and at least one plans to mark up prices this week. Bolt and nut manufacturers have declined to comply with requests from automobile manufacturers to defer shipments but instead have canceled contracts.

Wire Products.—The American Steel & Wire Co. has added the advance in freight rates from Pittsburgh to Cleveland to its quotations on nails and wire for shipment from its Cleveland mills. This company's quotation now is the Pittsburgh base price plus 24c. per 100 lb. for freight, an advance from 17c.

Old Material.—The scrap market is firmer and somewhat more active. A Cleveland mill in the week purchased from 20,000 to 25,000 tons of steel-making scrap, the price being understood to be \$27 for heavy melting steel and \$24 for compressed steel scrap. There is some inquiry from dealers for heavy melting steel and short turnings for shipment to the Pittsburgh district, \$28 being offered for the former and \$18 for the latter. Railroad malleable scrap has advanced \$1 per ton and busheling scrap is fully \$1 a ton higher. The latter is being sold to steel plants, there being practically no demand from rolling mills for this grade. One Cleveland mill has agreed to pay the increase in freight rates on scrap under contract and dealers hold that all mills should consent to bear the additional cost of delivery, which amounts to \$1 per ton for shipment from Detroit to Cleveland or from Cleveland to Pittsburgh. A great deal of scrap will have to pay the higher freight rates that would have been moved before the advance had cars been available for shipment.

Dealers quote delivered consumers' yards in Cleveland and vicinity as follows:

Heavy melting steel.....	\$27.00 to \$27.25
Steel rails, under 3 ft.....	30.00 to 31.00
Steel rails, rerolling.....	33.00 to 34.00
Iron rails.....	32.00 to 33.00
Iron car axles.....	41.00 to 42.00
Steel car axles.....	36.00 to 37.00
Low phosph. melting scrap.....	28.00 to 28.25
Cast borings.....	18.00 to 18.25
Machine shop turnings.....	13.00 to 13.25
Mixed borings and short turnings.....	18.00 to 18.25
Short turnings for blast furnaces.....	16.50 to 17.00
Compressed steel.....	23.50 to 24.00
Railroad wrought.....	28.00 to 29.00
Railroad malleable.....	33.00 to 34.00
Steel axle turnings.....	20.50 to 21.00
Light bundle sheet scrap.....	15.00 to 16.00
Drop forge flashings over 10 in.....	20.00 to 21.00
Drop forge flashings under 10 in.....	20.00 to 21.00
No. 1 cast.....	41.00 to 42.00
No. 1 busheling.....	19.00 to 20.00
Railroad grate bars.....	32.00 to 33.00
Stove plates.....	32.00 to 33.00
Cast-iron wheels.....	37.00 to 38.00
Pipes and flues.....	24.50 to 25.00

Stockholders of the Trumbull Steel Co., Warren, Ohio, have approved a change in the common stock par value from \$100 to \$25. The par value of the junior issue was reduced to increase the marketability of the stock, states President Jonathan Warner, and to enable employees to buy it more readily.

Philadelphia

PHILADELPHIA, Aug. 24.

Coincident with the advance in freight rates, effective Aug. 26, are higher prices on some brands of foundry pig iron. Eastern makers of bolts, nuts and rivets have announced an advance in prices, effective Aug. 23. Some scrap prices are higher this week. The only weakness in products related to iron and steel is in coal and coke. Gas coal has been purchased by Eastern steel plants at about \$9.50 per ton, whereas only recently \$11 to \$11.50 had been paid; blast furnace coke is distinctly easier, and obtainable for prompt delivery at \$17 to \$17.50, a drop of about a dollar in the last two weeks.

Makers of plates are more concerned over the freight rate rise than any other class of steel manufacturers. The lack of demand for plates apparently does not justify any advance in prices, notwithstanding the increased cost of manufacture, which is rated by Eastern mills at several dollars a ton. Plates are still obtainable at 3.25c. to 3.50c., Pittsburgh, even specification plates having been sold by independent mills at the latter price.

The principal transaction of the week in steel was a sale of about 16,000 tons of ship plates to France. Half of this tonnage was booked by the leading interest, presumably at the Corporation price of 2.65c., Pittsburgh, and the other half was taken by an independent mill at 3.50c., Pittsburgh.

Strength in the pig iron market is attributed to scarcity of metal rather than to the increased freight rates, which, according to sellers here, will add \$2.50 to \$3 a ton to the cost of making iron at Eastern Pennsylvania furnaces. One Eastern interest has advanced its price on foundry iron to \$51 base, while another has increased the spread between the base grade of iron and higher silicon grades.

British ferromanganese has been dropped in price from \$195 to \$170, seaboard, for delivery over the remainder of this year and first half of 1921.

Ferroalloys.—A reduction in the price of British ferromanganese has been made by one maker from \$195 to \$170 c.i.f. Atlantic seaboard, and it is expected that other British makers will take similar action. American makers of ferromanganese have decided to meet the cut, and will probably quote in the neighborhood of \$175, delivered, their quotation for some time past having been \$200, delivered. No change has occurred in spiegeleisen, which is held by Eastern makers at \$82.50 to \$85, furnace.

Pig Iron.—The upward trend of pig iron prices has not yet halted. Scarcity of iron for early delivery has prompted one Eastern interest to advance its price from \$50 to \$51, base, while another Eastern furnace has increased the differentials for high silicon iron. Although \$50, base, is still quoted by this furnace, its price for No. 2X is \$52.50, furnace, and for No. 1 foundry, \$55, furnace. A sale of standard low phosphorus iron has been made at \$60, furnace, an advance of \$6 over last reported transactions. An Eastern consumer has bought 1000 tons of basic pig iron at \$50, furnace, but shipment will be made from the Pittsburgh district, as Eastern makers have little basic to sell. Two makers are quoting \$50 for basic from Eastern furnaces. Gray forge iron is also quoted at \$50, furnace, though no sales are reported at that level. The great need of iron by some consumers is indicated by the payment of \$53.25, Ohio furnace, for about 200 tons of malleable iron, which will be shipped East. Although increased freight rates on ore, coke and limestone, it is stated, will add about \$2.50 to \$3 a ton to the cost of making iron at eastern Pennsylvania merchant furnaces, it is the scarcity of iron which is the chief factor in the continued rising selling prices. Consumers are wary of buying ahead at the present high level, and there is very little inquiry for first quarter of next year. Most of the current sales are small lots for early shipment. No Virginia iron is being offered for the remainder of this year, but quotations are being made for

first quarter on the basis of \$50, Virginia furnace. The new freight rate from Virginia to Philadelphia will be \$5.47, compared with present rate of \$4.10. No. 1 Warwick furnace of the Eastern Steel Co. was blown in on Aug. 19, having been out for more than a year, during which time it was completely rebuilt. It will make foundry iron for a time. The prices on iron quoted below are inclusive of the new freight rates in effect Aug. 26.

The following quotations are for iron delivered in consumers' yards in Philadelphia or vicinity, except those for low phosphorus iron, which are f.o.b. furnace:

East Pa. No. 2 plain, 1.75 to 2.25 in.	\$51.26 to \$52.54
East Pa. No. 2X, 2.25 to 2.75 in.	53.76
Virginia No. 2 plain, 1.75 to 2.25 in.	55.47
Virginia No. 2X, 2.25 to 2.75 in.	56.72
Basic deliv. Eastern Pa.	48.30 to 50.30
Gray forge	47.10 to 48.50
Standard low phos. (f.o.b. furnace)	60.00
Malleable	48.54 to 51.96
Copper bearing low phos. (f.o.b. furnace)	53.00 to 55.00

Coke.—An easier situation in coke exists, and prices for spot shipments have dropped at least \$1 in the past two weeks, but this will be offset by the increase in freight rates, which from the Connellsburg district to Philadelphia amounts to \$1.12 a ton.

Semi-Finished Steel.—Plate slabs and open hearth rerolling billets are now easily obtainable at \$60, Pittsburgh, but forging billets remain firm at \$75, Pittsburgh. An Eastern company has sold several hundred tons of off-grade rerolling billets at \$50, Pittsburgh, and forging billets at \$60, Pittsburgh. The new freight rate on semi-finished steel from Pittsburgh to Philadelphia, effective Aug. 26, is \$5.74.

Plates.—France has bought 16,000 tons of ship steel, half of which was taken by the leading interest, presumably at 2.65c., Pittsburgh, and the remainder by an independent mill at 3.50c., Pittsburgh. The deal has been under negotiation for two months. This is the largest transaction in plates in this market in some time, business being dull. Fourth quarter tonnage is now being offered by Eastern mills at 3.25c. to 3.50c., Pittsburgh. The advance in freight rates is a matter of great concern to some plate makers, who see no opportunity under present conditions to obtain more for their product despite increased manufacturing costs. Most of the Eastern mills have business on their books sufficient for two or three months' operation, but specifications are not being received as freely as desired. We quote sheared plates, $\frac{1}{4}$ in. and heavier, at 3.25c. to 3.50c., Pittsburgh, for early shipment.

Structural Material.—There is a fair demand for shapes in small lots, but no larger business is in the market. Prices are without change, being 3.25c. to 3.75c., Pittsburgh, for large shapes from independent mills.

Bars.—Two sales of steel bars of 1000 tons each have been made by an Eastern company at 4c., Pittsburgh, within the past week. Bar iron continues firm at 4.50c., Pittsburgh.

Rails.—One producer of light rails is making a considerable number of sales at 3.50c. and 3.75c., Pittsburgh.

Sheets.—We note one sale of 600 tons of blue annealed sheets by an Eastern mill at 6.50c., Pittsburgh. Another mill, which has been quoting 5.75c., base, on blue annealed, is now sold up for the remainder of the year.

Bolts, Nuts and Rivets.—Eastern makers of bolts, nuts and rivets have advanced, prices effective Aug. 23, the new discounts and net prices being quoted as follows:

Machine bolts, $\frac{3}{4}$ x 4 in., smaller and shorter, rolled threads, 25 and 10 per cent off. Cut threads, 25 per cent; larger and longer, 25 per cent. Machine bolts, c.p.c. and t. nuts, $\frac{3}{4}$ x 4 in., smaller and shorter, 10 per cent; larger and longer, 10 per cent. Common carriage bolts, $\frac{3}{4}$ x 6 in., smaller and shorter, 20 and 10 per cent off; rolled threads, 20 per cent; cut threads, 20 per cent; larger and longer, 20 per cent. Lag bolts, 40 per cent.

U. S. standard hot pressed nuts, square blank, 50c. off list; tapped, list; hexagon blank, 50c. off list; hexagon tapped, list.

U. S. standard c.p.c. and t., square and hexagon, blank, 50c. off list, tapped, list.

Semi-finished nuts, 40 per cent off. Case hardened hexagon nuts, 40 per cent. Washers, $\frac{1}{2}$ off list.

Boiler rivets, 5.50c. per lb. in 200 lb. kegs; structural or tank quality, 5.40c.; subject to usual extras. Small steel rivets, $\frac{1}{4}$ to 7/16 in., 45 per cent off list. Track bolts, $\frac{1}{2}$ in. and smaller, 8c.; larger, 6c.; subject to standard extras. Track spikes, 9/16 in. and larger, 4.50c.; $\frac{1}{2}$, 7.16, and $\frac{3}{4}$ in., 6c. Boat spikes, 6.50c. per lb. in small lots; 25 kegs or more, 6c.

All prices f. o. b. Pittsburgh.

Old Material.—Though the scrap market is mostly in a waiting attitude because of the uncertain effects of the new freight rates, there have been some sales during the past week and at higher prices than had been paid in previous transactions. Rolling rails, car-wheels, machine shop turnings and No. 1 cast are stronger and in each instance about \$1 or more higher in price. Heavy melting steel is firm, but mostly so because of buying in the Pittsburgh district. The Pencoyd works of the American Bridge Co. has purchased a considerable tonnage at \$26, but has declined offers at above that price. A Central Pennsylvania consumer has paid up to \$19.50 for machine shop turnings. We quote for delivery at consumers works in this district as follows:

No. 1 heavy melting steel	\$26.00
Steel rails rerolling	\$39.00 to 40.00
No. 1 low phos, heavy 0.04 and under	34.00 to 35.00
Car wheels	41.00 to 43.00
No. 1 railroad wrought	33.00 to 34.00
No. 1 yard wrought	26.00 to 27.00
No. 1 forge fire	17.50 to 18.00
Bundled skeleton	17.50 to 18.00
No. 1 busheling	20.00 to 21.00
No. 2 busheling	17.00 to 18.00
Turnings (short shoveling grade for blast furnace use)	17.00 to 18.00
Mixed borings and turnings (for blast furnace use)	17.00 to 17.50
Machine-shop turnings (for rolling mill and steel works use)	18.50 to 19.50
Heavy axle turnings (or equivalent)	20.00 to 20.50
Cast borings (for rolling mills)	21.00 to 21.50
Cast borings (for chemical plants)	21.50 to 22.50
No. 1 cast	40.00 to 42.00
Railroad grate bars	30.00 to 31.00
Stove plate (for steel plant use)	27.00 to 29.00
Railroad malleable	28.00 to 29.00
Wrought iron and soft steel pipes and tubes (new specifications)	23.00 to 24.00
Iron car axles	45.00 to 46.00
Steel car axles	42.00 to 44.00

IRON AND INDUSTRIAL STOCKS

Course of Prices Is Largely Governed by Professional Dealings

Although prices for iron and industrial stocks have continued irregular during the past week, with slight advantage on the down side, it is growing more evident that liquidation, temporarily, at least, is over. The course of prices of late to a very large extent has been governed entirely by professional dealings and subject from day to day to immediate developments. Iron and industrial stocks, based on earning power and money put back into properties, in a majority of cases are selling at prices which represent a discounting of commodity readjustment values.

The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chalm. com.	29 - 31	Midvale Steel	38 $\frac{3}{4}$ - 40 $\frac{3}{4}$
Allis-Chalm. pf.	71 - 71 $\frac{1}{2}$	Nat.-Acme	34 $\frac{1}{2}$ - 34 $\frac{3}{4}$
Am. Can com.	32 $\frac{1}{2}$ - 34 $\frac{1}{2}$	Nat. E. & S. com.	54 - 55 $\frac{1}{2}$
Am. Can pf.	88 - 89	N. Y. Air Brake	92 $\frac{3}{4}$ - 95
Am. C. & F. com.	130 $\frac{1}{2}$ - 135 $\frac{3}{4}$	Nova Scotia Steel	42 $\frac{1}{2}$ - 46
Am. Loco. com.	91 $\frac{1}{2}$ - 97 $\frac{1}{2}$	Press. Steel com.	91 $\frac{1}{2}$ - 96 $\frac{3}{4}$
Am. Steel F. com.	34 $\frac{3}{4}$ - 37 $\frac{1}{2}$	Ry. Stl. Spg. com.	92 - 93
Bald. Loco. com.	101 $\frac{1}{2}$ - 110 $\frac{1}{2}$	Ry. Stl. Spg. pf.	100 $\frac{1}{2}$
Bald. Loco. pf.	96 $\frac{1}{2}$ - 96 $\frac{1}{2}$	Replogle Steel	69 $\frac{1}{2}$ - 84 $\frac{3}{4}$
Beth. Steel com.	70 - 75 $\frac{1}{2}$	Republic com.	79 $\frac{1}{2}$ - 87
Beth. Stl. Cl. B.	71 $\frac{1}{2}$ - 76 $\frac{1}{2}$	Republic pf.	92 $\frac{1}{2}$ - 93
Beth. Stl.	8 $\frac{1}{2}$ pf. 108 - 109 $\frac{1}{2}$	Sloss com.	62 $\frac{1}{2}$ - 70 $\frac{1}{2}$
Chic. Pneu. Tool.	80 - 82 $\frac{1}{2}$	Superior Steel	47 $\frac{1}{2}$ - 51
Colorado Fuel	32 - 36	Transue-Williams	43 $\frac{1}{2}$ - 46
Cruc. Steel com.	131 - 137 $\frac{1}{2}$	Un. Alloy Steel	38 $\frac{1}{2}$ - 40 $\frac{1}{2}$
Cruc. Steel pf.	94 - 94 $\frac{1}{2}$	U. S. Pipe pf.	41 $\frac{1}{2}$ - 42
General Electric	138 $\frac{3}{4}$ - 142	U. S. Steel com.	85 $\frac{1}{2}$ - 90
Gt. No. Ore Cert.	30 $\frac{1}{2}$ - 32	U. S. Steel pf.	106 $\frac{1}{2}$ - 107
Gulf States Steel	50 - 55	Vanadium Steel	66 - 73 $\frac{1}{2}$
Int. Har. com.	122 - 125	Va. I. C. & Coke	64 $\frac{1}{2}$ - 65 $\frac{1}{2}$
Lackawanna Steel	66 $\frac{1}{2}$ - 69 $\frac{1}{2}$	Westingh'se Elec.	46 $\frac{1}{2}$ - 47 $\frac{1}{2}$
Lake Sup. Corp.	11 - 12		

ELECTRIC FERROMANGANESE

Process Used by Bilrowe Alloys Co. in Washington Employing Montana Manganese Ores

A brief description of the process in use at the ferromanganese plant of the Bilrowe Alloys Co., Tacoma, Wash., is from Charles D. Grier in Bulletin No. 5 of the Engineering Experiment Station of the University of Washington, entitled "Electrometallurgical and Electrochemical Industry in the State of Washington." An abstract follows:

In this plant, manganese ores from Philipsburg, Mont., are mixed with sufficient coke for reduction, limestone for fluxing, and a little metallic iron, and then smelted in six single-phase open-top shaft furnaces. Each furnace has a capacity of a little less than two tons per day when operating on the best ores. Four of these furnaces are inclosed in shells of 3/16-in. boiler-plate, 77 in. diam., 69 in. high, flanged at the top, with a 6-in. strip of brass running from top to bottom to break the magnetic circuit. The shells are cooled by a water spray from a perforated pipe that encircles the shell near the top. The other two furnaces are of reinforced concrete, 7 1/2 ft. square on the outside with a circular central shaft 79 in. diam. The lining of both kinds of furnaces is the same. At the bottom is a water-cooled cast-iron grid, which is embedded in and under the rammed mixture of ground carbon, graphite, and coal-tar that forms the bottom of the crucible. The side-walls of the crucible are made of California magnesite and extend up above the smelting-zone. Above this, the lining is of hard-burned firebrick, which will best withstand the abrasive action of the charge and of the poking necessary to insure proper descent of the charge.

The two concrete furnaces each have a guide, which extends from the sides and across the top of the furnace to hold the electrode in the center of the shaft. The other furnaces lack this feature, and their electrodes are merely supported by steel cables from a car-truck overhead. In all except one furnace, .16-in. square, amorphous carbon electrodes are used; in that one 20-in. round electrodes of the same material are used. The electrodes have threaded recesses in each end and new lengths are joined to the electrode in place by means of a threaded plug screwing into both pieces. A paste of graphite and raw linseed oil is used between the surfaces to increase the conductivity of the joint. Putting on a new length requires from ten to fifteen minutes with the concrete furnaces, but from one to two hours on the other furnaces.

The electrode-holders are in two parts, which clamp on the sides of the electrodes. They are water-cooled. The flexible water-connection required is an asbestos 1/2-in. steam hose. These holders have arms that extend past the side of the furnace where the clamps which make connections with the leads are bolted on. A counterweight balances this eccentric weight. Some trouble has been experienced with the holders, as the electrode faces are irregular and good contacts are not made over the entire surface. This results in hot spots, which eat away the carbon, sometimes producing an arc that attacks the copper, and frequently allows the suspended electrode to drop into the bath.

The power required for each furnace is approximately 350 kilowatts. The current is supplied to the terminals of the furnace at about 55 volts. The power factor is said to be about 90 per cent. The conductors to the furnace, which are 1/4 by 6-in. bars, are placed close to each other to minimize reactions, and the magnetic circuit in the shell is opened by the strip of brass mentioned before. The energy required per long ton of product is said to vary between 4600 kw.-hr., which is the amount used when running on the best ores, to an average of 5500 kw.-hr., which was the figure obtained over a period of four months while using the different grades of ore shown below. Power is purchased at rates varying with the load factor, and this is subject such as to earn a rate of from 3.31 to 3.52 mills per kw.-hr. Under the power contract, the plant is usually to shut-down in case of low water. During the past

two years it has lost approximately ten days, together with three or four minor interruptions.

The following analyses represent the different grades of Montana ore used:

Manganese Min Per Cent	Silica SiO ₂ Per Cent	Phos- phorus Per Cent	Iron Per Cent	Al ₂ O ₃ Per Cent	Moist- ure Per Cent
Concentrate ... 49.13	9.4	0.081	1.0	2.7	10.3
Washed ore ... 42.07	20.2	0.092	1.3	4.0	12.2
Coarse good ore ... 47.08	15.08	0.055	1.2	3.0	5.81
Coarse poor ore ... 38.27	23.4	0.077	..	6.0	9.55

The concentrate is fine and tends to pack in the furnace so tightly that the gases formed by the furnace reactions cannot pass freely. The result is that gas accumulates until the pressure is high enough to force a passage, which is usually along the electrodes, through which it "blows" with considerable force, materially shortening the life of the electrode. To minimize this trouble, coarse ore is mixed with the concentrate in equal quantities. It is also found necessary to mix the ores so that the Al₂O₃ content does not exceed 4 per cent. Ores exceeding this amount yield a slag which does not separate well from the metal, which is entangled in, and clings to, the slag when cool.

Typical analyses of the ferromanganese and the slag produced are as follows:

Ferromanganese	Slag
Per Cent	Per Cent
Manganese 80.03	Manganese 13.97
Iron 11.5	Ferrous oxide 1.2
Silicon 0.6	Silica 34.7
Phosphorus 0.274	Lime 35.8
	Alumina 4.6

The ingredients of the charge are bedded in small bins and are mixed by shoveling into the charge-cars which carry it to the furnace. The furnaces are fed continuously and are kept poked down at all times except during the 20 min. before tapping. It is desirable to have the furnace crust over before tapping so that no imperfectly separated material will be tapped out. The ferromanganese and slag are tapped into shallow cars every two hours, allowed to cool for several hours, after which slag and metal separate along a clean line if the charge has been correctly proportioned, and the alloy is ready for shipment.

Increase in Patenting in Past Year

WASHINGTON, Aug. 24.—The annual report of the United States Patent Office for the fiscal year ended June 30, discloses an extraordinary increase in business. According to these figures 81,948 applications for inventions were filed as compared with 62,755 during the previous year. The total number of applications of all kinds was 102,940, which is 27,283 more than were filed during the year 1919. The number of patents granted, and trademarks, labels and prints registered was 47,409, an increase of 4056 over the preceding fiscal year. The cash receipts from all sources, the largest item of which is for first fees in connection with applications, amounted to \$2,615,697.33. The office shipped to foreign governments 999,862 copies of patents. It received for record 40,188 deeds of assignment. One of the items which make up the large increase in the volume of business of the office is applications for the registration of trademarks, in which a gain of 72 per cent over the number received during the preceding fiscal year is recorded. The gain in actual numbers of applications filed far exceeded any previous increase of business in any one fiscal year, and this gain is larger than the total receipts of any calendar year in the history of the Patent Office up to and including the year 1881.

The Victory Oxy-Acetylene Equipment Co., San Francisco, has opened an office at 10 North Jefferson Street, Chicago. F. W. Clifford, secretary and treasurer of the company, is temporarily in charge until a district sales manager is appointed. Stock will be carried in the Chicago store.

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

August	Copper		Lead		Zinc	
	New York	Lake lytic	New York	New York	St. Louis	New York
18	19.00	19.00	48.12 1/2	9.12 1/2	8.87 1/2	8.40
19	19.00	19.00	47.75	9.12 1/2	8.87 1/2	8.40
20	19.00	19.00	46.75	9.12 1/2	8.87 1/2	8.45
21	19.00	19.00	46.50	9.12 1/2	8.87 1/2	8.45
23	19.00	19.00	46.50	9.00	8.75	8.45
24	19.00	19.00	45.50	9.00	8.75	8.45

NEW YORK, Aug. 24.

Buying is not heavy in any of the markets, but prices are generally steady. Copper is unchanged and tin is nominally lower. The lead market shows an easing tendency, while zinc is fairly firm.

New York

Copper.—Domestic consumers are taking very little interest in the market, but orders from abroad are being received daily. In fact, present foreign business is larger than domestic but neither is heavy. Shipments on contract continue to improve and consumption is therefore heavier. It is expected by some leading producers that within two or three weeks the buying movement should develop, which has been unduly held back because of the labor and transportation troubles in the past few months. Leading producers continue to maintain their prices firm at 19c., New York, for both Lake and electrolytic. In the outside market limited amounts are available around 18.75c., New York, but it is understood that these are only sufficient to satisfy some of the floating small demand.

Tin.—The market continues stagnant. In the last week there have been a few sales of future shipment tin done in a quiet way, but as a whole the market is featureless and uninteresting. The business referred to was transacted largely with dealers, consumers still remaining out of the market. Prices in London have also been declining recently, and this, together with the fall in exchange, has depressed the market here. Spot Straits tin, New York, is quoted to-day at 45.50c., which is a recession of over 2c. below the price a week ago, due to the foregoing causes. These quotations are also largely nominal. The London price to-day for spot Straits tin is £271 15s. per ton, which contrasts with £288 three weeks ago. The price for standard tin is also lower, spot delivery being quoted at £262 15s. and future at £269 5s. Future shipment tin in this market has sold around 46.75c. Arrivals thus far this month have been 3705 tons, with 5395 tons reported afloat.

Lead.—The market situation is a mixed one. While prices in the West are strong, in the East there is little demand and buyers are holding back and it is difficult to quote values in this section. It is estimated that from 6000 to 8000 tons of lead from England has already been contracted for and some of this has arrived. Buyers realize this, and note that it is an important feature in the situation. While in some cases lead in this market has sold for early delivery at 9.25c. to 9.37 1/2c., New York, import lead has also been contracted for as low as 8.50c., duty paid. The leading interest continues to quote at 8.75c., St. Louis, or 9c., New York, and the outside market may be conservatively quoted at 8.75c. to 9c., St. Louis, and 9c. to 9.25c., New York.

Zinc.—A similar situation to that in the lead market is developing in the zinc market. Offerings of zinc shipped from this country to England are being made in this market for reshipment to America, and there have been some sales of such material at 8c., New York. Just what effect this movement will have on the future of the market it is difficult to say yet. The market outside of this is generally strong, but demand

is light. Prime Western for early delivery is quoted at around 8.10c., St. Louis, and 8.45c., New York. Galvanizers seem fairly well supplied for the present.

Antimony.—Wholesale lots for early delivery are quoted at 7c., New York, duty paid, with jobbing lots at 7.25c. to 7.50c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted by the leading interest at 34.90c., f.o.b. producer's plant, and at 32c. to 33c. by other sellers.

Old Metals.—Consumers seem to be purchasing for immediate requirements only and as a result business is very dull. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible	18.00
Copper, heavy and wire	17.00
Copper, light and bottoms	14.50
Brass, heavy	12.75
Brass, light	9.00
Heavy machine composition	17.00
No. 1 yellow rod brass turnings	11.00
No. 1 red brass or composition turnings	14.50
Lead, heavy	8.00
Lead, tea	6.00
Zinc	6.00

Chicago

AUG. 24.—Copper and tin are very quiet, and the latter metal has declined to 50c. Lead is firm and in good demand, both spot and future business being closed. Spelter is in fair demand and has advanced slightly. Antimony is dull and unchanged as to price. There have been no changes in old metal prices. We quote Lake copper at 19c. to 19.25c. in carload lots; tin, 50c.; lead, 9.25c. to 9.50c.; spelter, 8.10c.; antimony, 8.50c. to 9c. On old metal we quote copper wires, crucible shapes, 13.50c.; copper clips, 13.50c.; copper bottoms, 11.50c.; red brass, 13.50c.; yellow brass, 9c.; lead pipe, 6.25c.; zinc, 4c.; pewter, No. 1, 25c.; tin foil, 30c.; block tin, 35c., all these being buying prices for less than carload lots.

St. Louis

AUG. 23.—The non-ferrous markets have been quiet but firm at 9.15c. to 9.25c. for lead and 8.05c. for spelter in car lots. In less than car lots the quotations are: 9.75c. to 10c.; spelter, 8.50c. to 8.60c.; tin, 56c.; copper, 19c., and antimony, 9.50c. In the Joplin district ores have been firmer but with practically no change in the prices paid, as reported last week. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 8c.; heavy yellow brass, 10c.; light copper, 12c.; heavy red brass, heavy copper and copper wire, 14c.; pewter, 25c.; tinfoil, 33c.; tea lead, 3c.; zinc, 4.50c.; lead, 6.50c.; aluminum, 20c.

For its American employees without families at its Niles plants, the Brier Hill Steel Co. of Youngstown, Ohio, has erected a commodious club house, connected with a dormitory annex which contains 46 bedrooms. The club is equipped with all modern complements for the convenience and comfort of its members. Frank Lannon has been appointed manager.

The Milwaukee Coke & Gas Co., Milwaukee, recently signed a contract with the Koppers Co., Pittsburgh, for the construction of a new by-product plant which will consist of three batteries and 50 ovens, the ovens being of the combination, new triangular flue type.

Ackerman Brothers Co., Inc., 95 Liberty Street, New York, announces that it is the representative for the New York district of C. E. Johansson, Inc., standard gaging sets, snap gages, etc., and for Jarvis high-speed tapping devices.

The Actuating Farm Gate Co., Minneapolis, Minn., is the new name of the concern formerly known as the National Automatic Gate Co.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

New York, 38c.; Philadelphia, 35c.; Boston, 41½c.; Buffalo, 29½c.; Cleveland, 24c.; Cincinnati, 33c.; Indianapolis, 34½c.; Chicago, 38c.; St. Louis, 47½c.; Kansas City, 81½c.; St. Paul, 69½c.; all in carloads, minimum 36,000 lb.; to Denver, the rate is \$1.35, minimum carload 40,000 lb.; Omaha, 81½c., minimum carload 36,000 lb.; New Orleans, 51½c., minimum carload 36,000 lb.; Birmingham, 76½c., minimum carload 36,000 lb.; to the Pacific Coast the rate is \$1.66½ per 100 lb. on articles of iron and steel, minimum carloads 80,000 lb., while the structural steel rate is \$1.66½, minimum carload 50,000 lb., or \$1.75½, minimum carload 40,000 lb.; the rate on ship plates, Pittsburgh to Pacific Coast, is \$1.33½ per 100 lb., minimum carload 80,000 lb.; on wrought iron and steel pipe, the rate from Pittsburgh to Kansas City is 78½c.; to St. Paul, 69½c.; to Denver, \$1.35; to Omaha, 78½c.; all in carload lots, minimum 46,000 lb.; to Jacksonville, Fla., all rail carloads, 55½c., minimum 36,000 lb.; rail and water, carloads, 46c., minimum 36,000 lb. On iron and steel items not noted above, the rates vary somewhat and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in., angles, 3 to 6 in., on one or both legs, ¼ in. thick and over, and zees, structural sizes, 2.45c. to 3.25c.

Wire Products

Wire nails, \$3.25 to \$4.50 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.50 and shorter than 1 in., \$2. Bright basic wire, \$3 to \$4 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3 to \$4.25; galvanized wire, \$3.70 to \$4.70; galvanized barbed wire and fence staples, \$4.10 to \$5.10; painted barbed wire, \$3.40 to \$4.45; polished fence staples, \$3.40 to \$4.50; cement-coated nails, per count keg, \$2.85 to \$4.10; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts of the American Steel & Wire Co. on woven-wire fencing are 60 per cent off list for carload lots, 59 per cent for 1000-rod lots, and 58 per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets..... \$4.50 base
Large boiler rivets..... 4.60 base
Small rivets..... 45 per cent off list
Small machine bolts, rolled threads, 40 and 5 per cent off list
Same sizes in cut threads..... 30 and 10 per cent off list
Longer and larger sizes of machine bolts, 30 per cent off list
Carriage bolts, ¾ in. x 6 in.:
Smaller and shorter, rolled threads, 30 and 10 per cent off list
Cut threads..... 30 per cent off list
Longer and larger sizes..... 25 per cent off list
Lag bolts..... 45 per cent off list
Flow bolts, Nos. 1, 2 and 3 head..... 35 per cent off list
Other style heads..... 20 per cent extra
Machine bolts, c.p.c. and t. nuts ¾ in. x 4 in.:
Smaller and shorter..... 30 per cent off list
Longer and larger sizes..... 20 per cent off list
Hot pressed and cold pressed sq. or hex. blank nuts..... \$1.50 off list
Tapped nuts..... \$1.00 off list
Semi-finished hex. nuts, U. S. S. and S. A. E.:
¾-in. and larger..... 50 and 10 per cent off list
½-in. and smaller..... 50 and 10 per cent off list
¾-in. and smaller, A. L. A. M. or S. A. E.,
60 and 5 per cent off list
Screw bolts in packages..... 60 and 10 per cent off list
Screw bolts in bulk..... 60, 10 and 2½ per cent off list
Tite bolts..... 50 per cent off list
Track bolts..... 7c. base
Iron cap screws..... 40 per cent off list
Set screws..... 40 and 10 per cent off list
One cent per lb. extra for less than 200 kegs. Rivets in
100-lb. kegs 25c. extra.
All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$52 to \$80; chain rods, \$75 to \$80; screw stock rods, \$80 to \$85; rivet and bolt rods and other rods of that character, \$75 to \$80; high carbon rods, \$85 to \$100, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, \$4 to \$4.25 per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ½-in. and 7/16-in., \$4.40 to \$4.75; 5/16-in., \$5 to \$5.50; track bolts, \$7. Boat and barge spikes, \$4.40 to \$4.75 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Tie plates, \$3 to \$4 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lbs. \$12.80 per package; 8-lb. coating, I. C., \$14.10; 12-lb. coating, I. C., \$15.80; 15-lb. coating, I. C., \$16.80; 20-lb. coating, I. C., \$18.05; 25-lb. coating, I. C., \$19.30; 30-lb. coating, I. C., \$22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.35c. to 3.50c. from mill. Common bar iron, 4.75c.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Butt Weld

Steel	Iron			
Inches	Black	Galv.	Black	Galv.
1½, 1¾ and 2½	47 to 50½ 20½ to 24	8½	15½ to 25½	+1½ to 11½
2½	51 to 54½ 36½ to 40	1½	19½ to 29½	1½ to 11½
¾ to 3	54 to 57½ 41½ to 44	5½ to 13½	24½ to 34½	8 to 18½

Lap Weld

2	47 to 50½ 34½ to 38	2	20½ to 28½	6½ to 14½
2½ to 6	50 to 53½ 37½ to 41	2½ to 6	22½ to 30½	9½ to 17½
7 to 12	47 to 50½ 33½ to 37	7 to 12	19½ to 27½	6½ to 14½
13 and 14	37½ to 41	35 to 38½		

Lap Weld, extra strong, plain ends

1½, 1¾ and 2½	43 to 46½ 25½ to 29	½	+17	+50
¾	48 to 51½ 35½ to 39	½	13½ to 23½	6½ to +3½
½ to 1½	52 to 55½ 39½ to 43	½	18½ to 28½	5½ to 15½
2 to 3	53 to 56½ 40½ to 44	½ to 1½	24½ to 34½	9½ to 19½

Lap Weld, extra strong, plain ends

2	45 to 48½ 33½ to 37	2	21½ to 29½	8½ to 16½
2½ to 4	48 to 51½ 36½ to 40	2½ to 4	23½ to 31½	11½ to 19½
4½ to 6	47 to 50½ 35½ to 39	4½ to 6	22½ to 30½	10½ to 18½
7 to 8	43 to 46½ 29½ to 33	7 to 8	14½ to 22½	2½ to 10½
9 to 12	38 to 41½ 24½ to 28	9 to 12	9½ to 17½	5½ to +2½

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots and on butt and lap weld galvanized iron pipes have been nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots f.o.b. Pittsburgh:

Lap Welded Steel	Charcoal Iron
3½ to 4½ in. 15 to 40½	1¾ and 1½ in. +20
2½ to 3½ in. 10 to 30½	2 and 2½ in. +10
2½ in. 4 to 24	2½ and 2¾ in. +1
1½ to 2 in. +½ to -19½	3 and 3½ in. -1½
	3½, 4 and 4½ in. -8

Standard Commercial Seamless—Cold Drawn or Hot Rolled

Per Net Ton	Per Net Ton
1 in. \$327	1¾ in. \$207
1½ in. 267	2 to 2½ in. 177
1¾ in. 257	2¾ to 3¾ in. 167
1½ in. 207	4 in. 187
	4½ to 5 in. 207

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department which will be subject to special negotiations.

Sheets

Prices of the Steel Corporation for mill shipments on sheets of United States standard gage in carloads and larger lots for indefinite delivery are given in the left-hand column. For reasonably prompt delivery, mills are getting up to the prices quoted in the right-hand column:

Blue Annealed	Cents per lb.
No. 8 and heavier	3.50 to 7.45
Nos. 9 and 10 (base)	3.55 to 7.50
Nos. 11 and 12	3.60 to 7.55
Nos. 13 and 14	3.65 to 7.60
Nos. 15 and 16	3.75 to 7.70

Box Annealed, One Pass Cold Rolled	
Nos. 17 to 21	4.15 to 8.30
Nos. 22 to 24	4.20 to 8.35
Nos. 25 and 26	4.25 to 8.40
No. 27	4.30 to 8.45
No. 28 (base)	4.35 to 8.50
No. 29	4.45 to 8.60
No. 30	4.55 to 8.70

Galvanized Black Sheet Gage	
Nos. 10 and 11	4.70 to 8.50
Nos. 12 to 14	4.80 to 8.60
Nos. 15 and 16	4.95 to 8.75
Nos. 17 to 21	5.10 to 8.90
Nos. 22 to 24	5.25 to 9.05
Nos. 25 and 26	5.40 to 9.20
No. 27	5.55 to 9.35
No. 28 (base)	5.70 to 9.50
No. 29	5.95 to 9.75
No. 30	6.20 to 10.00

Tin-Mill Black Plate	
Nos. 15 and 16	4.15 to 7.80
Nos. 17 to 21	4.20 to 7.85
Nos. 22 to 24	4.25 to 7.90
Nos. 25 to 27	4.30 to 7.95
No. 28 (base)	4.35 to 8.00
No. 29	4.40 to 8.05
No. 30	4.40 to 8.05
Nos. 30½ and 31	4.45 to 8.10

Forty Per Cent Freight Increase in Effect

Most Iron and Steel Rates Take the Extreme Advance Applying to Eastern Classification Territory—Typical Figures Under the New Schedules

Increases in freight rates on iron and steel products, ranging from 25 to 40 per cent according to territory, become effective Aug. 26, in accordance with the recent decision of the Interstate Commerce Commission. The commission gave special permission to the railroads to file their tariffs in abbreviated form, seeing that the actual rates on all commodities and for all points in the various classification territories cannot be fully worked out for weeks. It is to be said in general of iron and steel products that for the most part the country's output will take the 40 per cent advance, seeing that the chief iron and steel producing centers and the heart of the iron and steel consuming

FINISHED MATERIAL (Per 100 lb. in carloads)			
Pittsburgh to—	New Rate.	Old Rate.	Increase.
Philadelphia	\$0.35	\$0.25	\$0.10
New York	0.38	0.27	0.11
Boston	0.415	0.295	0.12
Buffalo	0.295	0.21	0.085
Cleveland	0.24	0.17	0.07
Cincinnati	0.33	0.235	0.095
Indianapolis	0.345	0.245	0.10
Chicago	0.38	0.27	0.11
St. Louis	0.475	0.34	0.135
Kansas City	0.815	0.59	0.225
Kansas City (pipe)	0.785	0.56	0.225
St. Paul	0.695	0.495	0.20
Omaha	0.815	0.59	0.225
Omaha (pipe)	0.785	0.56	0.225
Denver	1.35	0.99	0.36
Pacific Coast	1.665	1.25	0.415
Pacific Coast, ship plates	1.335	1.00	0.335
Birmingham	0.765	0.575	0.19
Jacksonville, all rail and water	0.555	0.415	0.14
Jacksonville, rail and water	0.46	0.345	0.125
New Orleans	0.515	0.385	0.13

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per lb. on carloads of a minimum of 40,000 lb.

PIG IRON

(Per Gross Ton.)			
Mahoning and Shenango Valleys to—	New Rate.	Old Rate.	Increase.
Pittsburgh district	\$1.96	\$1.40	\$0.56
Cleveland district	1.96	1.40	0.56
Canton, Ohio	1.96	1.40	0.56
Mansfield, Ohio	2.52	1.80	0.72
Middletown, Ohio	4.06	2.90	1.16
Midland, Pa.	1.26	0.90	0.36
Erie, Pa.	1.96	1.40	0.56
Philadelphia, Pa.	6.16	4.40	1.76
New York	6.72	4.80	1.92
St. Louis	6.44	4.60	1.84
Detroit	3.92	2.80	1.12
Buffalo	2.94	2.10	0.84
Cumberland, Md.	3.08	•2.20	0.88

*Via Pittsburgh & Lake Erie Railroad.

Buffalo to—	New Rate.	Old Rate.	Increase.
Albany, N. Y.	\$2.52	\$1.80	\$0.72
Jersey City, N. J.	5.46	3.90	1.56
Boston	5.46	3.90	1.56

Virginia to—	New Rate.	Old Rate.	Increase.
Philadelphia	\$5.47	\$4.10	\$1.37
Brooklyn and Jersey City	5.87	4.40	1.47
Boston	6.27	4.70	1.57

Birmingham, Ala., to—	New Rate.	Old Rate.	Increase.
Cincinnati	\$4.50	\$3.60	\$0.90
Louisville, Ky.	4.125	3.30	0.825
St. Louis	5.375	4.30	1.075
Chicago	6.67	5.00	1.67
Cleveland	6.67	5.00	1.67
Detroit	6.935	5.20	1.735

Birmingham, Ala., to—	New Rate.	Old Rate.	Increase.
St. Paul	9.735	7.30	2.435
New York	9.60*	7.20	2.40
Philadelphia	8.67	6.50	2.17

Ironton and Jackson, Ohio, to—	New Rate.	Old Rate.	Increase.
Cincinnati	\$2.52	\$1.80	\$0.72
Cleveland	3.36	2.40	0.96
Detroit	3.64	2.60	1.04

*All rail.

COKE

(Per Net Ton.)

Connellsville, Pa., to—	New Rate.	Old Rate.	Increase.
Baltimore	\$3.36	\$2.40	\$0.96
Buffalo	3.64	2.60	1.04
Canton, Ohio	2.80	2.80	0.80
Chicago	4.62	3.30	1.32
Cleveland	3.08	2.20	0.88
Columbus, Ohio	3.08	2.20	0.88
Detroit	4.06	2.90	1.16
East St. Louis	5.04	3.60	1.44
Erie, Pa.	3.08	2.20	0.88
Harrisburg	3.22	2.30	0.92
Joliet, Ill.	4.62	3.30	1.32
Louisville, Ky.	4.62	3.30	1.32
Milwaukee	4.90	3.50	1.40
New York	5.32	3.80	1.52
Philadelphia	3.92	2.80	1.12
Pittsburgh	1.68	1.20	0.48
Port Henry, N. Y.	5.04	3.60	1.44
Pottstown, Pa.	3.78	2.70	1.08
Reading, Pa.	3.64	2.60	1.04
Richmond, Va. (B. & O.)	5.32	3.80	1.52
Richmond, Va. (P.R.R.)	5.46	3.90	1.56
South Bethlehem, Pa.	3.92	2.80	1.12
Swedeland, Pa.	3.92	2.80	1.12
Toledo	3.64	2.60	1.04
Mahoning and Shenango Valley points	2.52	1.80	0.72
Wheeling	2.52	1.80	0.72

IRON ORE

(Per Gross Ton)

Direct Ore

Lake Erie Ports to—	New Rate.	Old Rate.	Increase.
Valley districts	\$0.91	\$0.65	\$0.26
Dover, Ohio, district	0.98	0.70	0.28
Midland, Pa., district	1.105	0.79	0.315
Pittsburgh district	1.275	0.91	0.365
*Jackson, Ohio, district	1.00	0.715	0.285
†Jackson, Ohio, district	1.245	0.89	0.355
Ironton, Ohio, district	1.385	0.99	0.395
Hamilton, Ohio, district	1.385	0.99	0.395
Johnstown, Pa., district	1.44	1.03	0.41
Lehigh Valley, Pa., dist.	2.155	1.54	0.615
Sparrows Point, Md., dist.	2.225	1.59	0.635

*From Toledo.

†From Cleveland.

On dock ore, in addition to the line haul, there is a charge of 16c per gross ton for handling from rail or vessel to the dock pile, of 10c per ton from dock pile to car and a storage charge of 1c per ton per month.

districts lie in the so-called Eastern Classification territory, embracing all of the section lying east of the Mississippi and north of the Ohio and Potomac rivers. In Southern territory the increase is 25 per cent, but on shipments from Southern territory into Eastern Classification territory it is 33 1/3 per cent. The award in a part of the old Western Classification territory is 35 per cent, and in the newly created Mountain-Pacific territory it is 25 per cent.

The rates as figured out thus far by the railroads are subject to minor adjustments. The rule followed has been to adopt the figure reached by the addition of the exact percentage, with the exception that 1/2c. is the only fraction used. Under the McAdoo advance of 25 per cent odd amounts were done away with; that is, where a rate figured out \$6.67 it became \$6.65, or if it figured out \$6.68 it became \$6.70. Odd amounts appear frequently in the new iron and steel rates. The

rates given below for iron ore, coke, pig iron and finished material are in accord with the figures as computed by various railroad freight departments.

Some uncertainty has been created by the action of several State railroad commissions relative to intrastate traffic. The Public Service Commission of New York State withheld approval of the new rates, but it now appears that the commission does not oppose the advance in freight rates, its disapproval applying to the increased passenger rates. Reports from various Western states indicate that intrastate freight rates will be adjusted to conform to the advance in interstate schedules. The Wisconsin Railroad Commission has sanctioned the 35 per cent advance, and the chairman of the Iowa commission has announced that a like increase will be authorized in that State. The California Railroad Commission has made an increase of 25 per cent in intrastate freight rates, that being the amount granted by the Commerce Commission.

The tables below are presented as typical rather than as inclusive schedules for the iron and steel trade. Under "Iron Ore" are shown the increases in freights to the principal districts to which Lake Superior iron ore is shipped from lower Lake ports. The pig iron increases are mostly figured at 40 per cent; those from Birmingham to points north of the Ohio River are 33 1/3 per cent, and those for points in the Southern territory are 25 per cent. As a river point, Cincinnati is included in the 25 per cent advance. The coke rates are those from Connellsville, Pa., to the principal consuming points. Under "Finished Material" the new and old rates per 100 lb. from Pittsburgh to representative consuming centers are given.

It is not yet clear what will become of the lower rates that have been in effect heretofore in certain districts to compete with water rates. On pig iron such rates have been in effect to various points in the North located on waterways. Buffalo furnaces have such a rate in shipping to tide-water points in New Jersey. It has been \$2.60, as against the regular rail rate of \$3.90. It is a question whether these water-competing rates will be continued. As yet the various combination rail-and-water rates are undetermined, such as the rail-and-water rates on pig iron from Alabama and Virginia furnaces to New York harbor and New England points. The question of advances in coastwise shipping rates has been settled by the Shipping Board as noted elsewhere in this issue.

Plant for Material Handling Machinery at New York

The recent purchase of a site at 135th and 136th streets, Locust and Walnut avenues, New York, by the Lakewood Engineering Co., Cleveland, contractors' equipment, and the Clyde Iron Works, Duluth, Minn., derrick blocks, etc., included a warehouse 100 x 135 ft. The warehouse will be used by the purchasers and the Barber Greene Co., Aurora, Ill., portable conveyors, for supplying the New York district. The three concerns are members of the Allied Machinery Co., New York. A siding that will be finished in about three months is being laid to connect the warehouse with the New York, New Haven & Hartford Railroad. No decision has been made by the purchasers as to the ultimate disposal of the additional land. The superintendent of the warehouse will be William Hanson.

Cross Currents in German Iron and Coal Prices

BERLIN, GERMANY, Aug. 9.—The Rhenish-Westphalian Coal Syndicate has filed an application with the federal coal board of Germany for another considerable increase in prices. In rejecting certain claims of the syndicate the government declares that most of the works are making sufficient profits from their by-products to shoulder the additional burden resulting from the recent increases in wages. The federal coal board, however, sanctioned the proposed increase in so far as it covers increases in wages.

It is significant that while negotiations were proceeding the steel federation decided on a 10 to 15 per cent reduction in prices of pig iron and steel. In estimating its prices it may be pointed out, however, the German iron industry was influenced by the prices of ores principally imported from abroad. Moreover, since the last fixing of prices the German exchange has considerably improved, which automatically resulted in a reduction in cost prices. It may seem quite feasible, therefore, that in spite of a reduction of iron prices there may be a need for increasing the prices of coal. But if there is an increase in the cost of coal it is natural to expect that there will be a reaction on the prices of iron and steel.

A desire to build up its export trade influenced the Steel Federation to make its recent reduction in prices,

it may be further stated, and it is feared that this part of its business will be seriously affected if there is a rise in the prices of coal. The increase in coal prices would be especially hard on the small iron concerns and force them in some cases to allow themselves to be absorbed into the bigger interests, who are directly affiliated with coal-producing concerns.

Increase Lake and Coastwise Rates

WASHINGTON, Aug. 24.—To enable water lines to compete with the railroads the Shipping Board has approved the following increases in coastwise and lake freight rates:

Between Norfolk and North Atlantic ports, 40 per cent.

Between Norfolk and New Orleans, 25 per cent.

Between New Orleans and Mexican border, 35 per cent.

Between Great Lakes ports, 40 per cent.

Between New York and Canal Zone, 10 per cent.

Between New York and Porto Rico, 20 per cent.

Hog Island Shipyard to Be Sold

WASHINGTON, Aug. 24.—The United States Shipping Board has announced that bids will be opened at ten o'clock on the morning of Oct. 30, for Hog Island Shipyard, Philadelphia, the largest in the world and the first to build fabricated ships. Bids will be received by the Supply and Sales Division of the Emergency Fleet Corporation, Sixth and B Streets, N. W., Washington. The Shipping Board also announced that bids will be opened September 1 for the sale of the steel ships owned by the Board.

Rolling 18-in. Ship Channels

The Indiana Steel Co. has started to roll 18-in. ship channels at Gary, Ind., the only interest now rolling this large size, the use of which does away with building up channels on the bottom of the ship.

The Draeger-Corbett Machinery Co., Milwaukee, machine tools, mill and factory equipment, has increased its capital stock from \$25,000 to \$50,000.

PERSONAL

Maj. Richard W. Alger has been appointed manager of the southern department of the H. K. Ferguson Co., Cleveland, engineer and builder. Prior to the war he practiced architectural engineering in Chattanooga, Tenn., for several years, before which time he was engaged in similar work in Ohio. He was commissioned first lieutenant of engineers in June, 1917, and detailed to the construction division of the army. He remained with this organization during his entire service, resigning his commission of major in March, 1920, to accept a position as assistant chief engineer with the H. K. Ferguson Co. He is a member of the American Society of Heating and Ventilating Engineers. His headquarters are now 815 Austell Building, Atlanta, Ga. Richard E. J. Summers, who has been with the company as structural engineer since December, 1919, has been appointed assistant chief engineer. He is a graduate civil engineer, Cornell University, and formerly with McClintic-Marshall Co., Pittsburgh, as assistant engineer. As a first lieutenant, Engineers Reserve Corps, at the outbreak of the war, he was assigned to the 15th U. S. Engineers, the first engineers sent to France. He was promoted to captain July 30, 1918. For nearly a year he was engineer officer in charge of all construction in the Western Division of the Great Gievres Depot for the A. E. F. He is an associate member of the American Society of Civil Engineers and Cornell Society of Civil Engineers.

A. A. Stewart, who for the last eleven years has been assistant electrical engineer of the Illinois Steel Co., Gary works, has resigned to accept the position of electrical engineer of the Pittsburgh Steel Products Co. plants at Monessen and Aliquippa, Pa.

At a meeting of the board of directors of the Briscoe Motor Corporation, on Aug. 19, H. F. Wardwell, former railroad man and for the last few years president of the Burnside Steel Co., maker of castings, Chicago, was elected president to succeed F. Cowin.

G. Bronson Philhower, Jr., is now with the Reading Iron Co. in its railroad sales department. He has had training in the technical publishing business in New York automobile and tool-steel sales work, and, during the war, the mechanical division of the Navy, being attached to the aviation and submarine chaser divisions. He took intensive training in the plants of the Reading Iron Co., whose apprentice course he entered in February, 1920. Later he was appointed salesman, with headquarters at the Reading Iron Co.'s New York office, 99 John Street.

Capt. George B. Malone, formerly with the Corps of Engineers, U. S. A., now general manager of the K-G Welding & Cutting Co., 556 West Thirty-fourth Street, New York, has taken charge of the Philadelphia office of the company at 929 Chestnut Street.

Olin H. Landreth announces that the advanced stage of construction of the plant of the Eastern Potash Corporation, near New Brunswick, N. J., made it necessary to remove the engineering office of the company from its general offices at 120 Broadway, New York, to the plant on Aug. 1. Being unable personally to go to New Brunswick, he has resigned as chief engineer of the company and has been appointed consulting engineer, the duties of which require only a part of his time. In the remainder of his time he will specialize in power development, industrial engineering, hydraulic engineering and valuation work. His office is at 156 Fifth Avenue, New York.

Headed by President James H. Grose and Chairman of the Board J. B. Kennedy, officials of the Brier Hill Steel Co., Youngstown, Ohio, started last week on their annual inspection of the company's ore properties in Minnesota. George F. Alderdice, vice-president, Fred Tod, director and assistant to Mr. Alderdice, Warren F. Perry, assistant to the president in charge of industrial relations, James E. Parker, secretary, John

R. Stroh, manager of the mining department and C. Homer Rose, comptroller, are among those who comprise the party.

F. B. McConnell of Pittsburgh, treasurer of the Columbiana Foundry Co., Columbiana, Ohio, has assumed active charge of the foundry at Columbiana, succeeding J. L. Sullivan, who has been transferred to the company's plant at McKeesport, Pa.

Edward L. Ferguson, who has been in the sales department of the Sharon Steel Hoop Co. at the home office in Sharon, Pa., for the past three years, has been transferred to the Cleveland branch office.

Frederick Whitesell, mechanical engineer, Fairbanks-Morse Co., Chicago, Ill., and Wharton Clay, commissioner, Associated Metal Lath Manufacturers, have been appointed on the national committee on employment for the American Association of Engineers, Chicago, Ill.

E. E. Hunt has been appointed purchasing agent of the Memphis Steel Construction Co. of Pennsylvania, succeeding M. B. Starrett.

James A. Carey, formerly Pittsburgh district representative of the Hill & Griffith Co., Cincinnati, has gone into business for himself and opened offices in the Fulton Building, Pittsburgh. He will handle a general line of foundry supplies.

Paul Miller, formerly assistant superintendent of the Mesta Machine Co., Pittsburgh, has joined the Hagan Corporation, Pittsburgh, engaged in combustion engineering, and will have charge of the Eastern division of that company working out of its New York office. Mr. Miller was born in Connellsville, Pa., and was graduated from Carnegie Institute of Technology.

Truman S. Foote is in charge of a branch office of the American Brass Co., Waterbury, Conn., recently established at 904 Union Bank Building, Pittsburgh.

Edgar M. Lewis, formerly with the E. J. Woodson Co., Detroit, recently joined the J. S. McCormick Co., Pittsburgh, maker of foundry supplies.

W. C. Hamilton, formerly works manager of the Granite City, Ill., plant of the American Steel Foundries Co., has resigned that position to become works manager of the Duquesne Foundry Co., the Pittsburgh plant of which is located at Coraopolis, Pa.

Harry C. Bell, formerly supervisor of safety, Northwestern Railroad region, has been appointed secretary of the Chicago local of the National Safety Council.

Howard R. Williams has resigned from the sales department of the Youngstown Sheet & Tube Co., located at the home office in Youngstown, Ohio, to enter the sales department of the Electric Alloy Steel Co., at Youngstown.

Edward D. Rockwell, manager plant B, New Departure Mfg. Co., Bristol, Conn., has bought the hardware business of S. A. Weldon & Son, that city.

Harry G. Robinson, assistant superintendent Locomobile Co., Bridgeport, Conn., in charge of production methods and general equipment, has accepted a position as general superintendent of the Lincoln Machine Co., Pawtucket, R. I., maker of automobile parts, textile feed rolls, special machinery and tools.

N. J. Vadarvaux, formerly assistant manager order and wholesale department American Steel & Wire Co., has resigned after eighteen years of service with the Steel Corporation at Cleveland, Boston and Pittsburgh, and is now located at Ellwood City, Pa., as assistant superintendent of the American Steel Co.

George C. Jones, formerly with Bancroft Jones Corporation, Buffalo, has been appointed Eastern sales manager of the Steel Fabricating Corporation with offices at 1270 Broadway, New York.

Peter MacGregor, a director of Sanderson Brothers & Newbould, Ltd., Sheffield, England, maker of tool steels, is spending a number of weeks in this country.

John D. Brunton, Musselburgh, Edinburghshire, Scotland, a manufacturer of steel wire, wire ropes and drawn steel products, is at present in the United States.

George A. Wall, president of the Wall Pump & Compressor Co., Quincy, Ill., which was recently organized, was formerly connected with the Gardner Governor Co., Quincy, Ill., for about 20 years.

Clarence H. Howard, president Commonwealth Steel Co., St. Louis, is returning home from a ten weeks' stay in Europe. He was a delegate to the meeting of the International Chamber of Commerce in Paris.

C. S. Du Mont, of London, England, is now in the United States arranging for the representation in Great Britain of several American products in machine tool and machinery specialty lines.

J. Leonard Replogle, of the Vanadium Corporation of America and the Replogle Steel Co., 120 Broadway, New York, returned to the United States on Aug. 21.

Vervil Preston has resigned as president of the Cromwell Steel Co., Cleveland, of which he became the head nearly a year ago, after retiring from the presidency of the Eastern Steel Co., Pottsville, Pa. C. A. Orr, who has been vice-president and assistant to the president, will serve as acting-president until the vacancy is filled.

B. A. Cornwell, engineer electrical department of the Ohio works of the Carnegie Steel Co., Youngstown, Ohio, and Walter Greenwood, safety engineer of the Ohio works, are both to deliver papers before the annual meeting of the Association of Iron and Steel Electrical Engineers on Sept. 20 at New York.

OBITUARY

WILLIAM J. FENNERTY, vice-president and Pittsburgh district sales manager Alliance Machine Co., Alliance, Ohio, died suddenly at his home, 1317 Shady Avenue, Pittsburgh, Aug. 17. He was a native of Pittsburgh, and before becoming identified with the Alliance Machine Co. had been connected with the purchasing department of Carnegie Steel Co. for several years. He was 49 years old and a brother of the late Harry Fennerty, at one time purchasing agent for the Carnegie Steel Co. He was a member of the Duquesne Club and the Pittsburgh Athletic Association.

FRANK F. Woods, president S. A. Woods Machine Co., Boston, maker of knife grinders, etc., died recently at his home in Brookline, Mass., after an illness lasting eight years, resulting from a nervous breakdown. Mr. Woods was born in Boston, Oct. 3, 1855.

W. S. OTTINGER, SR., for 36 years associated with the Cambria Steel Co., and at the time of his retirement, several years ago, assistant general manager of sales of the company, died Aug. 15 at his residence at Ocean City, N. J. He was 67 years of age and began with the Cambria company as a clerk. He is survived by his widow, three daughters and his son, W. S. Ottinger, Jr., of the Hofmann Steel Co., Philadelphia.

Defective Aluminum Alloy Castings

WASHINGTON, Aug. 23.—Ten per cent of the light aluminum alloy castings made in the United States in 1919 were defective, according to a report which has been compiled by the Bureau of Mines. The monetary loss caused by scrapping the defective castings is estimated by the bureau at \$1,125,000. The total castings recorded in the statistics of the bureau is 90,000,000 lb. and its experts have figured that it cost 12½c. per lb. to scrap the castings which were not usable. "The investigation made by the bureau," says the report, "warrants the advice that this loss could be reduced by 50 per cent at an approximate saving of about \$600,000. The highest average losses found by the bureau were in the manufacture of automotive castings, with vacuum cleaner parts second, and cooking utensils third.

"About 97 per cent of the output of sand castings," continues the report, "is poured from an alloy containing about 92 per cent aluminum and 8 per cent copper, known in the trade as No. 12 alloy. The rest of the output is cast from various alloys including different kinds of binary aluminum-copper alloys, aluminum-magnesium alloys, and aluminum-zinc alloys and ternary aluminum-copper-manganese alloys, and aluminum-copper-tin-alloys, aluminum-copper-zinc alloys, and aluminum-manganese-zinc alloys. Also some exceedingly complex alloys are cast, but these make a small percentage of the total output.

"In founding any kind of castings," says Robert J. Anderson, who compiled the report, "even with the best practice, scrap castings are produced because of rejections for certain defects. Casting losses are a serious source of financial loss in iron and steel foundry practice as well as in brass and bronze, but they are particularly serious in aluminum-foundry work because of the high value of aluminum. The indications are that in many aluminum foundries, in the United States, the casting losses are at times high, and in some plants they are entirely too high when compared with average practice. Of course defective castings have a residual value for remelting, but if much machine work has been done on a casting before it is scrapped, the labor costs alone may exceed the cost of the metal and even that of the rough casting.

"During the War, losses in the production of light aluminum-alloy sand castings for the Liberty, Hispano-

Suiza, Curtiss, and other aircraft engines, were uniformly high, particularly in the founding of crankcases and oil pans. The chemical and physical requirements for aluminum-alloy aircraft castings were not difficult to meet, but the rigid inspection and salvage specifications caused losses which were much higher than those usually experienced in the manufacture of commercial automotive castings. Rejection of crankcases and oil pans for the Liberty motor were as high as 50 per cent in some large foundries, with an indicated average casting loss of about 30 per cent for all plants.

"In the production of light aluminum alloy castings to meet the rigid specifications, higher losses must be expected than where no specifications, or only lax ones, are in force. Some of the difficulties in connection with the manufacture of aircraft castings during the war arose from labor troubles, lack of competent molders, lax supervision, and the general stress of the times, but many of the defects in rejected castings were traced to avoidable causes which in turn were the result of inadequate supervision."

O. F. S.

Employment Statistics for July

The iron and steel industry showed a decline of 1.3 per cent in the volume of employment in July from June of this year, according to statistics gathered by the United States Department of Labor, bureau of statistics. In 114 representative establishments of this industry there were 189,241 employees in July, compared with 191,806 employees in June. The semimonthly payrolls decreased from \$14,712,936 in June to \$13,582,615 in July.

Automobile manufacturing statistics showed an increase of 1.2 per cent in number of employees in July over the previous month, but there is a 0.2 per cent decrease in the total payrolls from 38 establishments of this industry, the average weekly payroll for July being \$3,668,969, compared with \$3,674,483 for June. The number of employees increased from 107,735 in June to 109,041 in July.

In car building and repairing, statistics compiled from reports furnished by 42 representative companies showed a decrease in number of employees from 56,049 in June to 46,481 in July, or 17.1 per cent, while the semimonthly payrolls in this industry decreased 18.7 per cent, or from \$3,541,498 in June to \$2,879,145 in July.

BOOK REVIEWS

Standard Electrical Dictionary. By T. O'Conor Sloane. Pages 767, 4 $\frac{3}{4}$ by 7 $\frac{1}{2}$ in.; 467 illustrations. Published by Norman W. Henley Publishing Co., 2 West Forty-fifth Street, New York.

A new edition brought up to date and enlarged. The book is an encyclopedia of definitions of terms and descriptions with illustrations of electrical appliances and connections. The general plan is to give a concise definition and then amplify and explain in a more popular way. Synonyms are also given, and references to other words and phrases are made. A second part has been added to the original volume to include recent advances in appliances, new developments and refinements in theory. This second part includes a series of short treatises on topics which have arisen since the last edition appeared.

Tin, Sheet Iron and Copper-Plate Worker. By Leroy J. Blinn. Pages 334, 5 by 7 $\frac{1}{2}$ in.; 207 illustrations. Published by Henry Carey Baird & Co., 2 West Forty-fifth Street, New York.

This is a new edition which has been enlarged by the addition of new pattern problems which deal more particularly with triangulation and modern skylight work. Noteworthy is the treatment of metallic alloys and solders, also illustrations and descriptions of the more important joints used in plate work and the various ways of making them. There are hints for tempering and for other operations and manipulations for every day use in the workshop. Included are rules for describing the various patterns used by sheet metal workers, practical geometry, mensuration of surfaces and solids, tables of weights and strength of metals and other materials, tables of areas and circumferences of circles, composition of metallic alloys and solders and numerous receipts and tables.

Shop Practice for Home Mechanics. By Raymond Francis Yates. Pages 320, 6 x 9 in.; 309 engravings. Published by the Norman W. Henley Publishing Co., 2 West Forty-fifth Street, New York.

A practical book for those who have had little or no experience in shop work, covering the use of tools, shop processes and construction of small machines, and involving the use of inexpensive small shop equipment.

The introduction is given over to an elementary explanation of the fundamentals of mechanical science. This is followed by several chapters on the use of small tools and mechanical measuring instruments. Elementary and more advanced lathe work is treated in detail and directions given for the construction of a number of useful shop appliances. Drilling and reaming, heat treatment of tool steel, special lathe operations, pattern making, grinding and grinding operations, home foundry work, etc., complete the volume. Numerous line drawings and half tones add to the volume as a visual instructor.

"Screw Thread Production to Close Limits" is the subject of a book of 192 pages, 6 x 9 in., by Howard E. Adt, president and treasurer Geometric Tool Co., New Haven, Conn. The book covers manufacturing methods of threading and tapping and describes special tools for accurate quantity production developed by the Geometric company. The scope of the publication is indicated by a number of chapter headings as follows: Evolution of the screw thread, screw thread standards, tables for limits and tolerances, gaging devices, testing threads for accuracy, threading with dies, screw cutting on automatics, taper threading and non-opening adjustable die heads, adjustable collapsing taps, cutting speeds,

grinding dies or chasers, speed of production, etc. The text is well supplemented with numerous tables and illustrations.

British Shipbuilding Outlook

The outlook for shipbuilding at present is somewhat uncertain, according to a writer in the trade supplement of the London, England, *Times*. Although the yards are full of work, they cannot at the moment say definitely that a continuance of their activity is assured. There have been many reports of the cancellation of orders for ships, and to a certain extent these are well founded, and the trade may, therefore, be expected to slacken on the completion of the orders now in hand, if cancellations are made permanent, or if new orders do not come along.

The action of the Government in disposing of a number of German ships to shipping companies is not expected to have any serious effect from the point of view of new construction. The number of these vessels is large, but, during the time they have been the property of the Government, they have been let to various companies and have been in use, so that their transfer to private ownership does not represent an addition to the carrying capacity of the country. It may be that the prices at which they are sold will enable their owners to accept cargoes at freights lower than those which have to be charged on ships built at the present high costs of material and labor—a condition which would make it unprofitable to carry on new construction—but those in a position to judge do not feel any apprehension on that ground.

"The question of the maintenance of freight rates has, however, an important bearing on the shipbuilding outlook. The war wastage of shipping has now been made good, and there is practically as much tonnage in the country at the present time as there was in 1913. That being the case, owners are shy of placing new orders at the prevailing high prices unless they can see the likelihood of a satisfactory return on their capital, and they are naturally marking time to see whether freights do fall, and if so, whether prices of construction will follow suit."

Indicators for carbon dioxide and oxygen in air and flue gas are discussed in technical paper No. 238 published by the Bureau of Mines, Washington. The paper describes instruments, designed in the chemical research laboratory at the Pittsburgh experiment station of the Bureau of Mines, for use in accurately indicating the proportion of carbon dioxide in the air that people who work in confined places breathe, and also in the flue gas or boiler furnaces. An instrument for determining oxygen in air is also described.

The Iron Trade Products Co., Pittsburgh, has opened a branch office at 30 Church Street, New York, in charge of Frank M. Welch. The Iron Trade Products Co. handles ores, pig iron, coal, coke, alloys, refractories and semi-finished and finished iron and steel. Mr. Welch, the New York manager, was for a number of years with the Republic Iron & Steel Co. and later with Hickman, Williams & Co. in the New York office. Previous to his present connection he was in charge of the iron and steel department of Knapp & Baxter, New York, exporters.

The Mono Corporation of America announces the removal of its main office from Buffalo to 25 West Broadway, New York, where its automatic continuously recording gas analyzing instruments will be displayed. F. D. Harger, vice-president and general manager, assisted by D. W. Reid and other chemical engineers and combustion experts, will be available there.

G. R. Mellon, 933 Communipaw Avenue, Jersey City, N. J., is moving to 380 Wayne Street, same city, where he is increasing capacity for manufacturing Mellon drills, special machinery and difficult parts.

The U. S. Expansion Bolt Co., 25 Elm Street, New York, has moved to 139 Franklin Street, same city.

Machinery Markets and News of the Works

RAILROADS BUYING

Activity at Chicago, Though Eastern Trade is Very Quiet

Some Railroad Supply Manufacturers Also Coming Into the Market for Shop Equipment

While machinery business in the East is characterized by the dullness which has prevailed for some weeks, there is some resumption of activity in the Central West, particularly at Chicago and Cincinnati. Railroad buying and inquiry are the conspicuous features of the Chicago market. The Union Pacific Railroad has issued a list of about a dozen large tools, which will cost about \$85,000, and in a smaller way the Santa Fe and the Wabash are buying, while the Rock Island system is in the market for a few tools. The Illinois Central is expected to begin placing orders this week against an extensive list. The M. K. & T. Railroad is inquiring at Cincinnati for punches and shears, and the Pennsylvania Railroad is expected to buy shortly for its lines West.

Nor is the buying and prospective buying by the

railroads the only result of the improved financial prospects resulting from the increase of railroad revenues, in effect this week. Railroad supply manufacturers are coming into the market, and more buying of this character is expected as soon as the railroads begin placing orders for equipment. The Federal Signal Co., Albany, N. Y., manufacturer of railroad signal systems, has issued a list of about a dozen tools.

Most of the markets continue dull, this being quite pronounced in the East and at Detroit, where the slump in automobile manufacturing has checked buying. At Cincinnati, however, the improvement in tone the past week has been quite noticeable, due in part, it is believed, to the better deliveries which manufacturers of tools are now able to quote. The falling off in business during the summer has enabled many shops to catch up to a considerable extent on back orders.

Cancellations are still reported, but these, in the main, affect single tools, and financial reasons are usually assigned as the reason. Prices are firm.

The Eclipse Automatic Mfg. Co., Hammond, Ind., has issued a list of about a dozen tools. Two or three good-sized lists are expected soon by sellers in the Cincinnati district.

New York

NEW YORK, Aug. 24.

The Federal Signal Co., Albany, N. Y., manufacturer of railroad signal systems, has come into the market for the following list of machine tools, indicating that railroad buying of its products is to be expected:

Two No. 2 Avey high speed drilling machines.
One No. 2½ Rockford milling machine.
Two four-spindle adjustable gang drilling machines, with 2½-in. drill.
One 3 x 36-in. Hartness automatic chucking lathe.
One 16-in. Smith & Mills shaper.
One 26-in. Smith & Mills shaper.
One 16-in. Hendey screw cutting lathe.
One 1½-in. Hendey screw cutting lathe.
One No. 5 Becker vertical milling machine.
One No. 2½ Garvin screw machine.
One No. 5 Foster screw machine.
One No. 6 Warner & Swasey screw machine.

Inquiries for machine tools are few, although some sellers report a slight improvement the past week. A great many quotations are outstanding, but some of these have been pending for months, and prospective buyers are in no hurry to take action in view of present somewhat uncertain conditions.

There are no new developments in the railroad situation, but inquiries from a number of Eastern roads are expected as soon as purchasing departments can obtain appropriations. The Watertown Arsenal, Watertown, Mass., has obtained quotations on about \$10,000 worth of locomotive repair tools, which will be used to repair Government locomotives.

The dullness which has characterized the market for some time continues.

The United States Hardware Corporation, Long Island City, has leased about 14,000 sq. ft. in the recently completed building at Freeman and William streets for the establishment of a plant for the manufacture of brass and copper goods.

The Remington Typewriter Co., 374 Broadway, New York, has filed plans for an addition to its recently acquired plant on Lawrence Street, Flushing, L. I., to cost about \$15,000.

The Ideal Radiator Cap Co., New York, has been incor-

porated with a capital of \$75,000 by A. Bangerter, C. F. Taylor and L. Guthiel, 759 Home Street, to manufacture metal products, machined specialties, etc.

The Kleinschmidt Electric Co., Inc., 36 Flatbush Avenue Extension, Brooklyn, manufacturer of electrical products, has increased its capital from \$100,000 to \$500,000.

The O. Maurer Co., Brooklyn, has been incorporated with a capital of \$50,000 by O. Maurer, P. W. Wolf and E. Schroedler, 306 Tompkins Avenue, to manufacture airplane motors, parts, etc.

The American Bosch Magneto Co., 223 West Forty-sixth Street, New York, a New Jersey corporation, with works at Springfield, Mass., has increased its capital to \$12,380,000.

The Rex Metal Pattern & Machine Co., New York, has been organized by E. G. Granlund and H. Heller, 444 West Thirteenth Street, to manufacture mechanical metal products.

The American Safety Razor Corporation, 303 Jay Street, New York, is taking miscellaneous bids for the erection of its new five-story plant at Jay, Lawrence and Johnson streets, to cost about \$300,000, including equipment.

The Aircraft Engineering Corporation, 2 East End Avenue, New York, manufacturer of airplane parts and equipment, has leased two floors in the building at Jackson Avenue and Honeywell Street, Long Island City, for a new branch plant. It is operating factories on East Seventy-ninth Street and East Ninety-third Street, New York.

W. H. Bowater, Inc., New York, has been incorporated with a capital of \$500,000 by R. E. Cooke, J. J. Reilly and J. F. Wharton, 62 Cedar Street, to manufacture iron and steel products.

The Denver Rock Drill Mfg. Co., New York, has been organized to manufacture mining equipment, quarrying apparatus, rock drills, etc. J. J. Lee and W. L. F. Gardiner, 261 West 112th Street, head the company.

Plans are being prepared by J. M. Felson, 1133 Broadway, New York, architect and engineer, for the erection of a three-story automobile service and repair building at Manhattan Avenue and 130th Street for the Caswell Motor Co., New York. It will cost about \$120,000.

A. E. Norton, Inc., 105 West Fortieth Street, New York, iron and steel construction specialties, has increased its capital from \$15,000 to \$90,000.

The New York Edison Co., Yonkers, N. Y., will build a

new one-story electric plant at Bennett Place and Dunwoodie Avenue, to cost about \$30,000.

Fire, Aug. 16, caused by an explosion, destroyed a portion of the Government arsenal at Bannerman's Island, near Beacon, N.Y., with loss reported at \$50,000.

The William R. Pitt Composite Iron Works, New York, has removed its plant from 219 West Twenty-sixth Street to 542 West Twenty-seventh Street, for increased operations.

The Aetna Explosives Co., 165 Broadway, New York, and its subsidiary, the Aetna Dynamite Co., have plans under way for expansion in manufacturing plants. The work will utilize surplus funds of the company and for the most part will cover the production of by-products. The Research Laboratories of the company are developing plans for the extensions. Benjamin B. Odell is president.

The Northwestern Electric Equipment Co., 35 Vestry Street, New York, manufacturer of motors, etc., has increased its capital from \$10,000 to \$200,000.

Kliegl Brothers, 240 West Fiftieth Street, New York, manufacturers of electric lighting devices, have acquired property on West Fiftieth Street, between Eighth and Ninth avenues, for the erection of a new four-story works. The company's present plant, on the same block, will be removed to the new location on completion of the building.

Electric traveling cranes, conveying machinery, hoisting apparatus and other mechanical freight handling equipment will be installed on the proposed new piers to be erected at the port of New York. Eighteen piers will be constructed along the Hudson River, replacing 32 old structures. Plans have been prepared by Commissioner of Docks Murray Hulbert and approval of a fund of \$50,000,000 for the project given by the Sinking Fund Commission. The piers will be from 950 to 1025 ft. in length; two will be 100 ft. wide, seven 150 ft., and nine 125 ft.; between each pier the maximum dockage space will be 300 ft. and minimum space 275 ft.

The machine shop of the Browning-Sommers-Adams Co., College Point, L. I., has been placed on the market. It is two stories and basement, brick and mill type, and includes a power plant. It is understood that the equipment of lathes, planers, drill presses, etc., will also be sold.

The Hindman Body Corporation, Long Island City, has leased the one-story building at Humboldt and Calyer streets, comprising about 15,000 sq. ft. of space, for the establishment of a new plant for the manufacture of automobile bodies.

Plans are being prepared by the Anchor Corrugating Construction Co., 140 Washington Street, New York, manufacturer of portable steel buildings, for the erection of a new plant at 1433-39 Thirty-eighth Street, Brooklyn, recently acquired. The present buildings will be replaced with a new structure, instead of being utilized, as previously announced. It is proposed to begin construction at an early date.

The Watson-Stillman Co., 190 Fulton Street, New York, manufacturer of pumping machinery, brass and other metal castings, etc., has awarded contract to H. Wilhelm & Son, 803 East Jersey Street, Elizabeth, N. J., for a one-story addition at Aldine, N. J., to cost about \$12,000.

The Hyco Fuel Products Corporation, Edgewater, N. J., has acquired a tract of land, heretofore held by the estate of E. H. Hinners, to be used in connection with a new plant for the manufacture of special fuel products.

The plant of the General Tractors Co., Paulsboro, N. J., has been placed on the market. It consists of a number of one-story buildings and 15 acres of land, including 1000 ft. of water frontage. The plant has a total of about 74,000 sq. ft. of floor space and was recently relinquished by the company, which abandoned the use after only a short occupancy.

The Industrial Engineering & Construction Co., Morris town, N. J., has been incorporated with a capital of 10,000 shares of stock, no par value, to manufacture tools and other machine products. The incorporators are Carl V. Vogt, Robert H. Schenck and Harold A. Price.

The Eastern Foundry Co., 152 Main Street, South River, N. J., manufacturer of iron and steel castings, etc., has increased its capital from \$350,000 to \$1,000,000.

Ruopp & Steinhauser, Inc., Pleasantville, N. J., has been incorporated with a capital of \$125,000 by John C. Ruopp and Rudolph Steinhauser, to manufacture machinery and parts, tools, etc.

The Bethlehem Shipbuilding Corporation, Bethlehem, Pa., a subsidiary of the Bethlehem Steel Co., has arranged an improvement program to cost about \$1,000,000 at its Moore plant, Elizabeth, N. J. A number of new buildings will be constructed, and plans for the erection of the first of these, to cost \$175,000, have been completed. The yard is now giving employment to about 1200 men, with weekly payroll aggregating approximately \$40,000. The company also holds property at Carteret, N. J., aggregating about 60 acres, and

fronting on the Kill van Kull River. Owing to controversies with the Elizabeth City Council regarding the closing of a local street it is said that the Moore plant may later be removed to this site. For extensions in operations the company is said to be negotiating for the purchase of the Gloucester City, N. J., shipyard of Pusey & Jones. In the event of purchase by the Bethlehem company, the plant will be converted into a ship repair works, with the construction of two large drydocks, marine railroad, machine and general construction buildings. In a brief filed with the court in connection with its controversy with the Government, Pusey & Jones state that the property is being offered for sale at less than one-half the amount of the initial investment.

The A. K. W. Electric Co., Bernardsville, N. J., has been incorporated with a capital of \$125,000 by C. S. Amerman and C. E. Whitcomb, Bernardsville, and Harry J. Kessler, West New York, N. J., to manufacture electrical specialties.

The George C. Moon Co., Garwood and Dumellen, N. J., manufacturer of wire rope, has arranged for a preferred stock issue of about \$50,000. A portion of the proceeds will be used to enlarge the local plants. The company recently filed articles of incorporation under Delaware laws with a capital of \$3,150,000. George C. Moon is president.

The purchasing company of the property of the Public Service Railway Co., Jersey City, N. J., referred to in the last issue of THE IRON AGE as the Shelter Co., is more correctly the Metal Shelter Co., 30 Church Street, New York. The company manufactures sectional steel buildings and will equip the plant for this purpose. The site is bounded by Fremont, Wayne, Factory and Academy streets.

John H. Fritzsinger, Keasbey, N. J., formerly superintendent at the local plants of the National Fireproofing Co., is organizing a new company to operate a plant for the manufacture of hollow tile products. An existing works at Highland Park, in this section, has been acquired, and equipment will be installed at an early date. Others interested are John H. Miller and H. C. Cooper, both formerly connected with the National company.

The Union Hardware Co., Elizabeth, N. J., has been incorporated with a capital of \$75,000 by Henry F. Roker, Frederick L. Haelsoop and M. J. Gilmour to manufacture hardware and other metal products.

The Highspeed Drill & Tool Co., 709 Ordway Building, Newark, N. J., has filed notice of organization to manufacture metal cutting tools, etc. Ralph Bowlus, 207 Walnut Street, Montclair, N. J., and George Effros, 225 West 11th Street, New York, head the company.

The S. Obenmayer Co., 2563 West Eighteenth Street, Chicago, manufacturer of foundry equipment and supplies, has acquired property at Blanchard and Ferry streets, Newark, formerly held by the Tomlinson-Messe Corporation. The building will be used by the new owner as a branch plant and equipment will be installed at once.

The Van Dorn Steel Products Co., 30 Church Street, New York, has filed plans for a one-story building at 319-14 Cort Street, Irvington, N. J.

The Ironbound Saw Co., 19 Commercial Street, Newark, has filed notice of organization to manufacture saws, etc. John A. Krulikowski, 6 Franklin Avenue, Harrison, N. J., heads the company.

The plant of the American Splint Co., Kearny, N. J., has been placed on the market. The site comprises about 20 acres, with a number of one-story brick buildings, and main structure 125 x 400 ft. The plant has been used for the manufacture of machinery and totals about 70,000 sq. ft. of floor space.

The O'Brien Storage Battery Co., 87 Halsey Street, Newark, has been organized to manufacture storage batteries and operate a repair works for electrical equipment. David O'Brien heads the company.

The Embroidery Machine Supplies Co., 506 Hackensack Plank Road, West Hoboken, N. J., has filed notice of organization to manufacture machine parts for textile equipment, etc. Conrad and Fred H. Market head the company.

The Essex Foundry, Murray Street, Newark, manufacturer of cast iron pipe, has awarded a contract to Eustice Brothers, 40 Clinton Street, for a new one-story building.

The Newark Welding Co., 10 Lillie Street, Newark, N. J., has been organized to manufacture welding equipment. Peter Barneo, 57 Boyd Street, heads the company.

The American Engineering Co., 207 Market Street, Newark, has been organized to manufacture automobile parts and accessories. Nathan G. Kresner, 271 Hunterdon Street, heads the company.

Catalogs Wanted

Fernando P. Quinones, Carrera del Chile 41, Quito, Ecuador, desires catalogs in Spanish or French covering foundry machinery, equipment and supplies. He is interested in equipping a small iron and brass foundry.

Philadelphia

PHILADELPHIA, Aug. 23.

The Fidelity Machine & Mfg. Co., 1015 Paul Street, Philadelphia, has acquired property at 3936-40 Frankford Avenue, 96 x 231 ft., for a consideration of \$12,000, to be used for extensions.

The Allison Steel Products Co., Chester, Pa., is taking bids for the erection of a one-story, concrete and steel addition, 30 x 65 ft.

Henry Disston & Sons, Inc., Tacony, Philadelphia, manufacturer of saws, files, etc., has filed plans for the erection of a one-story addition to its machine shop at Wissinoming and Knorr streets.

The Supply & Sales Division of the Emergency Fleet Corporation, Washington, D. C., will take bids up to 5 p. m., Sept. 20, for the purchase of the Hog Island Shipyard, Philadelphia. The plant has a total area of 946 acres, with a water frontage of two miles. The total floor space of all buildings on the property is 4,505,000 sq. ft., the equivalent of 103 acres, and of which about 24 per cent is of fireproof type. There are 50 shipways, 10 of which are concrete and the remainder wood. When the ships now being completed at the yard are finished, a total of 122 cargo vessels will have been constructed at the plant.

The Richater Machine Co., Eldrick and Van Kirk streets, Philadelphia, has filed plans for a one-story addition.

Details are being perfected for a merger of the Hale & Kilburn Co., Eighteenth and Lehigh streets, Philadelphia, manufacturer of steel automobile bodies, railroad car seats, etc., with the Wadsworth Mfg. Co., Kercheval Avenue, Detroit, manufacturer of similar products, under the name of the American Motor Body Corporation. The American Can Co., 120 Broadway, New York, is interested in the proposed merger, and will have voting control in the new organization, naming two-thirds of the voting trustees. Edward G. Budd of the Edward G. Budd Mfg. Co., Twenty-fifth Street and Hunting Park Avenue, Philadelphia, manufacturer of steel automobile bodies, will be president of the new corporation and in direct charge of operations.

The Pennsylvania Range & Boiler Co., 2024 North Tenth Street, Philadelphia, will commence immediate erection of a one-story addition to its boiler shop to cost about \$15,000.

The new foundry of the Westinghouse Electric & Mfg. Co., Pittsburgh, at its Essington works, near Philadelphia, is estimated to cost about \$100,000. It will be one-story, 120 x 200 ft.; construction will begin at once.

The Adder Machine Co., Kingston, near Wilkes-Barre, Pa., manufacturer of visible adding machines and parts, has had plans prepared for a two-story addition, 75 x 160 ft., at Walnut and Hoyt streets to be equipped as an assembling works.

The Lancaster Iron Works, Lancaster, Pa., has completed plans for an addition to its machine shop, to be used in connection with its clay-working machinery department. James P. Martin is manager of this branch of the business.

The Lewistown Foundry & Machine Co., Lewistown, Pa., is now devoting operations almost exclusively to the manufacture of sand pulverizing machinery and parts. Orders have been taken for a large number of machines, ranging in size to 12 tons.

Fire, Aug. 12, destroyed the electric shop and other buildings at the plant of the Crucible Fuel Co., Glassmere, near Tarentum, Pa., with loss estimated at \$25,000.

The Pennsylvania Valve & Fitting Co., Reading, Pa., has awarded a contract to the McClintic-Marshall Co., Pittsburgh, for steel work for its addition. Construction will begin at an early date.

The Hutchison Mfg. Co., Norristown, Pa., recently incorporated with a capital of \$25,000, is planning for the establishment of a local plant for the manufacture of special combination wood-working machinery and parts. Gilbert Hutchison, Norristown, is president; Douglas Boyce, Binghamton, N. Y., vice-president, and E. J. Fager, Harrisburg, Pa., secretary and treasurer.

An application for the incorporation of a new iron company to be known as the Andes Foundry Co., of Lancaster, Pa., will be filed in Pennsylvania during the week. Eugene B. Andes, Mary E. Andes and William D. Andes, all of Lancaster, are the organizers of the proposed corporation, which will manufacture castings, machinery and tools.

The Boll Brothers Mfg. Co., Harrisburg, Pa., has plans for the installation of additional machinery to increase its output of reamers, milling cutters and other tools. Until recently the firm also manufactured mattresses, but this branch of the business had been sold to permit specialization in the production of metal tools.

New England

BOSTON, Aug. 23.

The machine-tool market, after a spurt of activity last week, has suffered a relapse, business being nearer a standstill than at any previous time this year. Local selling interests attribute present conditions largely to vacations and are confident that business will materially improve after Labor Day, inasmuch as a large number of machine tools can still be classified as under negotiation. Buying by the General Electric Co., West Lynn, Mass., for instance, has been deferred, but it is understood this company requires a number of tools and will place orders at some future date. The trade is comparatively free from cancellations. Prices hold very firm. Deliveries are still extended, largely because of transportation conditions. Nevertheless a slow but gradual improvement is being made. It is interesting to note that a Connecticut manufacturer of chucks reports an excellent export demand on a basis of payment in 90 days. In fact, 45 percent of this company's business is export. It recently opened several promising Swiss accounts and is negotiating with others.

The Amoskeag Mfg. Co., Boston and Manchester, N. H., cotton, has bought a gear cutter and is still negotiating for spindle drill and small lathe equipment. Its grinder requirements, which were under negotiation, are temporarily abandoned. Other New England mill interests have failed to act on their machine-tool needs. A. Hankey & Co., Inc., Roachdale, Mass., tools, machine knives, drop forging, etc., is in the market for immediate shipment of a No. 6 Becker milling machine, or its equal, for die work, and is also interested in a drill and large punch equipment. The Wrentham Heal Co., Lynn, Mass., is inquiring for a 22-in. drill, and the S. D. Warren Co., Cumberland, Me., paper, on three lathes, a radial drill and a planer. The American Metal Parts Co., Brighton, Boston, is buying considerable equipment, mostly second-hand. The Millers Falls Co., Millers Falls, Mass., hardware, is asking for quotations on a sensitive drill. The Boston Salvage Board, which contemplated holding an auction of machine tools at the Scituate Proving Grounds, Scituate, Mass., this week, has been obliged to postpone the sale until some time in the early part of September. The exact date has not been set.

Walden-Worcester, Inc., Worcester, Mass., wrenches, is installing automatic machinery in its new plant and it is anticipated that some operations will start within a month. The company in July did the largest business in its history.

The United States Government will soon ask bids for rebuilding its machine shop at Woods Hole, Mass.

Oscar G. Thomas, representing the Leonard & Baker Stove Foundry, Taunton, Mass., and the Barstow Stove Co., Providence, R. I., has purchased an idle power plant at Rehoboth, which will be remodeled to accommodate enameling equipment as soon as a company is formed by the new owner.

The Waltham Lathe & Mfg. Co., Waltham, has taken out a Massachusetts charter to manufacture bench lathes and is capitalized for \$50,000. Auguste C. Hentsi, 56 Fuller Street, Waltham, is president, and Francis H. Ricker, 3 Woodlawn Avenue, Waltham, treasurer.

The American Tap & Die Co., Greenfield, Mass., successor to Nichols Brothers, is enlarging its facilities to increase production. It also manufactures a complete line of threading tools as well as butchers' cutlery. A. B. Allen is president.

The Mason Machine Works Co., Taunton, textile and other machinery, has been organized under Massachusetts laws to take over the assets and liabilities of the Mason Machine Works, capitalized for \$1,000,000. The new company is also capitalized for \$1,000,000, consisting of 10,000 shares of preferred stock, par value \$100, and 10,000 shares of common, no par value, all of which is issued. Clarence N. Grey, Beverly, is president, and Karl Singer, Boston, treasurer, who with Ira H. Ellis, Brookline, Chauncey W. Hood, Boston, and William A. Hill, Cambridge, constitute the board of directors. The balance sheet of the Mason Machine Works as of Dec. 31, 1919, showed total assets and liabilities of \$2,411,740.38.

The Underwood Typewriter Co., Hartford, Conn., has acquired the former plant of the Bullard Machine Tool Co., Bridgeport, Conn., including a modern five-story building erected in 1917. It will hereafter be known as plant No. 2 and will be devoted exclusively to the manufacture of the Underwood portable typewriter, heretofore made in Hartford. The purchase includes approximately 106,875 sq. ft. of land and several buildings having a total floor space in excess of 168,000 sq. ft. Charles D. Rice, superintendent of the Hartford plant, will probably be manager of the new Bridgeport works. The Bullard Machine Tool Co. has removed all of its machinery to its new West End plant, which has 250,000 sq.

ft. of floor space, and is expected to begin operation within a week or two.

The Standard Oil Co. of New York has awarded a contract for the construction of a five-story garage and repair shop, 20 x 138 ft., on Munroe and Fifth streets, Cambridge, Mass., at an estimated cost of \$250,000.

Work on a one-story, 32 x 100-ft. machine shop for the Steel Specialties Co., Waltham, Mass., has been started on West Water Street, Wakefield, Mass.

A permit has been granted the Forging Service Co., Springfield, Mass., for an addition to cost about \$15,000.

Officials of the Eaton Dykeman Paper Co., Great Barrington, Mass., are considering the erection of a \$100,000 hydroelectric plant. The engineer for the work has not been selected.

Plans are being figured for a \$300,000 practical arts high school, containing a manual training department, to be erected in Manchester, N. H. R. D. Kimball, 6 Beacon Street, Boston, is the engineer.

The foundry owned by the Beaupree Brothers, Franklin, N. H., was destroyed by fire Aug. 14. It will be rebuilt.

The plant of the Nelson Co., Raynham Centre, Mass., rivets, was destroyed by fire Aug. 14 within an estimated loss of \$30,000. The erection of a new factory is contemplated.

The Portland Foundry Co., Portland, Conn., contemplates rebuilding part of its plant and extending it 100 ft., but the work is not expected to begin until spring. The engineer has been selected.

Plans are being drawn for an addition, probably four stories, mill construction, to the plant of the Lux Clock Mfg. Co., Waterbury, Conn.

The S. K. F. Ball Bearing Co., Hartford, Conn., has awarded contract for the erection of a one-story addition, 75 x 200 ft.

Contract has been awarded for an addition to the Cedar Hill machine shops, New Haven, Conn., for the New York, New Haven & Hartford Railroad. The crane capacity will be considerably increased.

The capital stock of Foster, Merriam & Co., Merriam, Conn., brackets, castings, etc., will be increased to \$1,000,000 to take care of improvements and increasing business. R. W. Millard is president and R. J. Merriam, treasurer.

The R. Wallace & Sons Mfg. Co., Wallingford, Conn., silverware, is constructing a two-story plant, 40 x 150 ft. at Littleton, N. H., where approximately 150 men will be employed at the start. Operations will begin in about three months. F. A. Wallace is president.

The new East Hartford plant of the Arthur F. Way Co., Hartford, Conn., small tools, etc., is nearing completion. The movement of machinery from the present to the new location has begun and some new equipment is being installed. Operations will begin about Sept. 1.

The Hobson & Potts Co., Danbury, Conn., has been incorporated with a capital of \$100,000 by W. H. Hobson, Danbury, and J. H. Hobson, Concord, N. H., to manufacture cutlery and hardware specialties.

The Morris Metal Products Corporation, Bridgeport, Conn., has increased its capital to \$8,000,000.

The Farber Cornice Works, Pawtucket, R. I., has changed its name to the Farber Sheet Metal & Roofing Co., at the same time increasing its capital to \$30,000 for extensions.

The Greenfield Tap & Die Corporation, Sanderson Street, Greenfield, Mass., is having plans prepared for a five-story addition. It is also planning for a new one-story forge shop at Turners Falls, Mass., to cost about \$50,000. Harris & Richards, Drexel Building, Philadelphia, are architects for the first building.

The Springfield Automatic Machine Screw Co., Fitchburg, Mass., will soon call for bids for its proposed new plant at West Springfield, on property recently acquired. It will comprise a main one-story brick and steel plant, with a number of smaller buildings, and is estimated to cost about \$100,000. Isaac T. McGregor is president. McClintock & Craig, 23 Lyman Street, Springfield, are architects.

The Dunbar Brothers Co., Bristol, Conn., manufacturer of clock springs, etc., has increased its capital from \$70,000 to \$150,000, and stock from 700 to 1500 shares, par value \$100.

The New England Wire Die Co., Waterbury, Conn., has been incorporated with a capital of \$50,000 by J. E. Thibault, V. J. Carroll and F. W. Carroll, 36 North Main Street, to manufacture metal and wire products.

The Standard Nut & Bolt Co., Valley Falls, R. I., has commenced work on the removal of the structure now occupying the site to be used for the erection of an addition to its plant. The extension will be one story and basement, 70 x 80 ft.

The plant of the New London Marine Iron Works, New London, Conn., recently used as a ship repair yard, has been

placed on the market. The property is improved with a number of buildings, including machine shop, foundry, power plant, etc.

The Hendey Machine Co., Torrington, Conn., has filed plans for an addition to cost about \$10,000.

The Norris Noiseless Pedal Action Co., Stoughton, Mass., manufacturer of piano hardware, has filed plans for a one-story addition to cost about \$18,000.

The Pratt & Cady Co., Inc., Hartford, Conn., manufacturer of valves, steam fittings, etc., is taking bids for a brick and concrete addition to its plant on Capitol Avenue.

The American Machine Co., Hartford, Conn., has increased its capital from \$50,000 to \$100,000.

Chicago

CHICAGO, AUG. 23.

The Union Pacific has issued a list of heavy equipment which will involve an outlay of about \$85,000. All of the machines except two steam hammers are to be motor-driven. The list follows:

- Three extra heavy double axle lathes.
- One 90-in. heavy pattern driving wheel lathe.
- One 44-in. boring and turning mill.
- One 48-in. car wheel borer.
- One heavy-duty horizontal flange punch.
- One heavy-duty double grinder with 4-in. x 24-in. wheel.
- One 26-in. x 14-ft. heavy duty engine lathe.
- One 2000-lb. single frame steam hammer.
- One 8000-lb. double frame steam hammer.

The Wabash Railroad is in the market for two 16-in. portable lathes and a portable crank pin truing machine. The Santa Fe has bought a slab milling machine and a few other tools against its lists and has sent out additional inquiries for a 16-in. x 6-ft. portable bolt lathe, 2-in. double head bolt cutter, coach wheel lathe and driving wheel lathe. The Rock Island is in the market for a 36-in. belt-driven upright drill press and a 36-in. x 8-ft. belt-driven engine lathe. The Illinois Central is expected to purchase against its extensive list some time this week.

The increasing activity on the part of the railroads is expected to affect railroad supply manufacturers. While the latter have not yet entered the machine tool market extensively, one company, the American Steel Foundries, has bought a 6-ft. radial drill, 26-in. x 12-ft. engine lathe and a heavy duty drill, and is in the market for additional lathes. The Railway & Mine Supply Co., 332 South Michigan Avenue, Chicago, is inquiring for a car wheel borer to bore wheels 10 to 24 in. in diameter.

Aside from railroad business, the market continues slow, although it is showing signs of improving. Here and there some attractive inquiries are coming from miscellaneous manufacturers, among them the Eclipse Automatic Mfg. Co. which wants equipment for its new plant at Hammond, Ind. The list includes:

- One 36-in. x 36-in. x 4-ft. open side planer.
- One 24-in. x 14-ft. engine lathe.
- One 20-in. x 10-ft. engine lathe.
- One No. 3 universal milling machine.
- One 24-in. shaper.
- One 4-ft. radial drill.
- One drill press with 18-in. table.
- One high speed hack saw.
- One emery wheel stand.
- One $\frac{1}{4}$ -hp. portable grinding wheel.
- One small portable drill.
- One 1-ton hoist.
- One $1\frac{1}{2}$ -ton hoist.

The punch press is one machine for which there has been an unremitting demand throughout the year. The explanation lies in the fact that manufacturers are now stamping out of sheet metal many small parts which were formerly cast. The use of presses was stimulated by the high price of castings and the sold up condition of foundries.

Collections continue difficult and dealers are receiving a few cancellations—surprisingly few in view of delayed deliveries from Cincinnati and elsewhere. In looking to the future, sellers regard the excellent crops as a portent of good business conditions. While the tractor industry is not so active as it has been, implement manufacturers are enjoying a heavy trade. While this is due, in part, to the underproduction of implements during the war and the present shortage of farm labor, the principal impetus behind buying is believed to be the bumper crops now being harvested. It is an old axiom that agriculture is the foundation of prosperity and, no doubt, this season's farm output will have a favorable effect on business conditions generally, and will tend to counteract opposing economic factors.

The American Metal Co., manufacturer of metal special-

ties, 1107 South Wastenaw Avenue, Chicago, has let contract for a one story plant, 80 x 200 ft., 2821 South Kedzie Avenue, to cost \$18,000.

The Shotwell Mfg. Co., 3457-63 Potomac Avenue, Chicago, has let contract for a one story boiler house, 45 x 59 ft. and 12 x 20 ft., to cost \$8,000.

The Commonwealth Edison Co., 72 West Adams Street, Chicago, will erect a three-story power house, 296 x 310 ft., on 100th Street east of Commercial Avenue, to cost \$2,000,000.

The Peoples Gas, Light & Coke Co., 122 South Michigan Avenue, Chicago, has let contract for a one-story blower house, 22 x 67 ft., 2260 South Racine Avenue, to cost \$10,000.

The Durand Steel Locker Co., 76 West Monroe Street, Chicago, will build an addition to its Chicago Heights plant.

The Pioneer Truck Co., Valparaiso, Ind., will construct a plant, 100 x 300 ft.

The Visible Pump Co., Fort Wayne, Ind., has been incorporated with \$500,000 capital stock to manufacture gasoline tanks, etc., and will erect a plant. H. E. Dean, W. M. Roth and S. B. Rohrer are among the organizers.

The Moline Tool Co., Moline, Ill., has taken over the Moline Machinery Co. The machinery company's factory will be known as plant No. 2 and will continue to manufacture special machinery not produced in the other plant.

The Judy Mfg. Co., Centerville, Iowa, has let contract for a one-story foundry, 60 x 150 ft., to cost \$30,000.

The Board of Education, Pine Island, Minn., will build a two-story high school, 60 x 106 ft., to include a manual training department. L. L. Cornwell is secretary.

The Northwestern Iron Works, Devil's Lake, N. D., will erect a machine shop and foundry. S. A. Hann is president.

The Baker Ice Machine Co., Nineteenth and Nicholas streets, Omaha, Neb., plans to erect a \$200,000 factory.

The Concrete Products Corporation, West Liberty, Iowa, has purchased a site for a branch plant at Cedar Rapids, to manufacture concrete staves for coal pockets and silos.

Camp Custer, Battle Creek, Mich., has been ordered abandoned and salvaged. It is reported that several large industries are interested in the tract as a site for plants.

The Charles H. Miles Foundry Co., 2433 West Twenty-first Street, Chicago, is having plans prepared for a new one- and two-story plant on Thirty-fifth Street.

The plant of the John D. Roper Corporation, Rockford, Ill., has been placed on the market. It consists of a foundry, machine shop, mill and other buildings, with manufacturing area of about 61,000 sq. ft.

The Chicago Nipple Mfg. Co., 910 West Lake Street, Chicago, manufacturer of valves, fittings, etc., is considering plans for enlargements.

The Rex Steel Stamping Co., Joliet, Ill., has awarded a contract to Hansen & Peterson, Des Plaines and Allen streets, for a new one-story plant, 70 x 160 ft., at Maple and Wenberg streets, to cost about \$40,000. E. H. Daley, of the Buchanan, Daley Lumber Co., Joliet, will be in charge of operations.

The Big Four Railroad, Chicago, is taking bids for the construction of a one-story car repair shop at Kankakee, Ill., 200 x 300 ft., to cost about \$200,000, including equipment.

Claude H. Siems, Alan G. Siems and C. C. Semple, Guardian Life Building, St. Paul, Minn., are organizing a company to construct one or more freight car repair plants in St. Paul and Minneapolis with an initial capacity of 6000 cars, later to be expanded to 15,000. Efforts are now being made to arrange for the purchase of machine tools and other equipment.

Cleveland

CLEVELAND, AUG. 23.

The volume of machine tool business continues light. There is a moderate demand for single machines mostly, in small sizes, and sales as a rule are being made from dealers' stocks. Practically all inquiries are for immediate delivery and the manufacturer or dealer who can make the best delivery usually gets the order. Some cancellations are noted but these are mostly on orders for single machines. Frequently when a manufacturer attempts to cancel an order it is because of curtailment due to the financial situation rather than that the machine is not needed. In some cases a buyer decides to withdraw his cancellation order when he finds that the machine-tool manufacturer insists on an adjustment to protect him against loss on a machine built with special features. Local machinery houses having branches in Detroit find that the market is quieter there than in the Cleveland section. Rubber companies and shops allied with the tire industry are buying no equipment. Manufacturers of sugar-making machinery are very busy.

Local foundries are operating at an average capacity of about 65 per cent as compared with 85 to 90 per cent when striving to attain maximum production a few months ago. The curtailment is not due entirely to lack of orders, but in some cases is attributed to shortage of material.

Grey iron foundries that catered to the automobile trade report very few cancellation of orders but many automobile companies have held up shipments. The easing up in the foundry situation has resulted in a surplus of molders in Cleveland for about the first time since before the war.

The Concrete Steel Co. of New York, has purchased a 3-acre site on Berea Road, Elmwood Avenue and New York Central Railroad, Cleveland, and will build a plant for the manufacture and storage of steel reinforcing forms for concrete construction. One unit containing approximately 30,000 sq. ft. of floor space will be erected at once and it is the intention to add other units later. The company at present has a district sales office in the Guardian Building, Cleveland.

It is understood that the Union Chain & Mfg. Co., Seville, Ohio, contemplates moving its plant to a site in central or southern Ohio, and has several cities under consideration. It will require from five to ten acres. Increased business and the necessity for larger quarters is the reason for moving, although unsatisfactory labor conditions in the Cleveland-Akron district have had some effect in seeking a new location.

The Ohio Electric & Controller Co., Cleveland, has placed contract for a two-story addition, 38 x 110 ft.

The Electric Vacuum Cleaner Co., Cleveland, has placed contract for a one story addition, 65 x 80 ft.

The Baker R. & L. Co., Cleveland, will enlarge its plant by the erection of a four-story building, 64 x 110 ft. G. S. Rider & Co., Century Building, are the architects.

The Cleveland Wrought Products Co., West Fifty-eighth Street, Cleveland, will erect a one story addition, 56 x 145 ft.

The Ohio Locomotive Crane Co., Bucyrus, Ohio, has placed contract with the Austin Co., Cleveland, for a machine shop, 60 x 300 ft.

The Ashland Malleable Co., Ashland, Ohio, recently organized with a capital stock of \$150,000, has acquired a 4-acre site and will build a malleable iron foundry, 100 x 200 ft. It has effected its organization by the election of J. H. Firestone, president; Samuel Miller, vice-president; W. L. Rybolt, secretary and E. M. Armstrong, treasurer. The officers, together with George M. Baer, H. C. Swetland and M. V. Semple constitute the board of directors.

The Sandusky Foundry & Machine Co., Sandusky, Ohio, has acquired adjoining property, including a building which will be remodeled for a pattern department and storage house. Room in the present plant now used for these departments will be made available for molding purposes and an additional cupola will be erected.

The Harrold Tool & Forge Co., Colombiana, Ohio, has increased its capital stock from \$25,000 to \$50,000 and contemplates enlarging its plant.

The Differential Steel Car Co., Findlay, Ohio, has been incorporated with a capital stock of \$300,000 to manufacture electric dump cars and other equipment. It recently purchased the Government munition plant at Findlay, formerly operated by the Grant Motor Car Co.

The Electric Hardware Co., Mansfield, Ohio, placed orders the past week for seven punch presses and it is understood will be in the market for additional equipment shortly.

The Ideal Electric & Mfg. Co., Mansfield, Ohio, is planning the erection of a two-story factory and office building, 60 x 80 ft., and a one story building, 100 x 300 ft.

The Butcher Bailing Machine Co., Mount Vernon, Ohio, is erecting an addition, 63 x 84 ft.

The Bucyrus Copper Kettle Works, Bucyrus, Ohio, manufacturer of copper, brass and other metal products, has awarded contract to the Truscon Co., Youngstown, Ohio, for a new one story plant, 60 x 235 ft., to cost about \$75,000.

Detroit

DETROIT, AUG. 23.

The local machine tool business continues almost at a standstill, except for replacement orders and some scattering orders for single machines.

The Champion Brass Works, Coldwater, Mich., has under way extensions, which when completed will make it one of the largest brass foundries in Michigan.

The Cylinder Reclaiming Co., Lansing, Mich., has been purchased by J. Jurgenson and F. Casey from F. G. Lippett, and Harry Casey. The company controls the Laurence

patented process of reclaiming motor cylinders, water-jackets and crank cases that contain flaws or become scored or cracked.

The Carde Stamping & Tool Co., Saginaw, Mich., has purchased the plant of the Saginaw Paving Brick Co. with 12 acres of ground and will erect two shops, a press room 50 x 200 ft., and tool room, 40 x 150 ft. About 100 more men will be added to the force.

The Jewett Phonograph Co., Allegan, Mich., has under construction a concrete addition, 75 x 118 ft., to cost \$30,000.

The Fox Machine Co., Jackson, Mich., plans to confine its efforts hereafter solely to the manufacture of Fox multiple spindle drilling machines. Arrangements have been made to dispose of its milling machine business, developed during the war. The Huther Brothers Saw Mfg. Co., Rochester, N. Y., has bought the dado saw manufacturing business of the company.

The Grand Rapids Trust Co., Grand Rapids, Mich., has been appointed receiver for the Wilson & Housler Co., Montague, Mich., manufacturer of marine engines.

The Marvel Carburetor Co., 619 Mill Street, Flint, Mich., has filed plans for a two-story addition, 52 x 70 ft. With improvements in existing works, it will cost about \$100,000. J. R. Francis is secretary.

The National Alloys Co., Woodbridge Street, Detroit, is having plans prepared for a new one-story foundry, 60 x 100 ft., to cost about \$25,000.

The River Raisin Paper Co., Monroe, Mich., is having plans prepared for the construction of a new mill to cost about \$500,000, including machinery.

The American Machine Products Co., Eighteenth and Howard streets, Detroit, has taken bids for a new one-story plant, 65 x 100 ft., to cost about \$50,000.

The Utilities Compressor Co., Detroit, is considering plans for the erection of a new plant at Adrian, Mich., to cost about \$200,000.

The new plant of the Cadillac Motor Car Co., Detroit, on a 46-acre site, fronting on the Michigan Central and Lake Shore railroads, will comprise eight buildings. The main building, 600 x 800 ft., and ultimately six stories, will be used exclusively for manufacturing. A heat treatment building, 80 x 500 ft., will be located near the main works, while the assembling building, the second largest structure, will be 360 x 800 ft. Other structures include a power plant, storage building for finished automobiles and parts, 140 x 480 ft., and administration building, 50 x 225 ft. About 7000 will be employed. R. H. Collins is president and general manager.

The Hayes Wheel Co., Jackson, Mich., manufacturer of automobile wheels, has completed plans for a new one-story power house, 60 x 60 ft., to cost about \$40,000.

Cincinnati

CINCINNATI, Aug. 23.

A better tone is evident in the local machinery market regarding future prospects of the industry. Dullness has enabled manufacturers to catch up somewhat on deliveries, and they are now able to quote on machines for quicker delivery than for some time and as a result more business has been booked. While no big lists are out, buying has been fairly steady and in nearly all cases prompt deliveries were wanted. It is reported that the Pennsylvania Railroad, which some time ago inquired for equipment for its Columbus shops, will place orders shortly. The Williams Co., Springfield, Ohio, organized recently for the manufacture of steel wool, will be in the market for a miscellaneous line of tools and it is expected that the Paravon Tire & Rubber Co., Columbus, Ohio, and the Hercules Rubber Co., Cincinnati, will send out lists within the next 60 days. A number of inquiries for shears and punches are current, among them lists for the Missouri, Kansas & Texas Railroad, the International Harvester Co., Pressed Steel Car Co., General Tank Car Co. and the Studebaker Corporation.

No local price advances are noted, though with the increased freight rates coming this week, manufacturing costs will be higher. A manufacturer of pipe threading machines has advanced his prices about 10 per cent and it is rumored that a manufacturer of shapers will shortly announce an advance approximating 12½ per cent.

John F. Ohmer, Dayton, Ohio, has made an offer of \$160,000 to the Government for the purchase of the naval ordnance plant at Dayton, recently closed. Bids for the plant have been asked by the Navy Department but no action will be taken until these are opened on Aug. 31. The plant was offered for sale in July but no bids were received.

The addition to the plant of the Columbia Machine Tool Co., manufacturer of shapers, Hamilton, Ohio, will be completed in about three weeks. With the installation of machinery the capacity of the plant will be doubled.

The Paravon Tire & Rubber Co., Clinton Building, Columbus, Ohio, is contemplating the erection of a factory building, and has several sites under consideration. It will manufacture a puncture-proof pneumatic tire. Henry J. Eron is president.

The Computing Scale Co., Dayton, Ohio, has leased the property of the Manufacturers Production Co. at First and Cordova streets, for an extension to the main plant. The building was formerly occupied by the Maxwell Co., but during the past few years has been used by the Government as a storage plant for aircraft materials. It will be ready for occupancy Sept. 1.

The Springfield Malleable Iron Co., Springfield, Ohio, is erecting an addition to be used as a sand blast and inspection department. It will also erect a new office building costing \$75,000.

The Williams Co., Springfield, Ohio, has been organized with a capitalization of \$120,000 to manufacture steel wool. It is preparing to build a new factory equipped with its own specially designed machines. It will also be in the market for a miscellaneous line of tools. Operations are expected to begin by Dec. 31. William Robbins is general manager.

The Ferro-Concrete Construction Co., Cincinnati, has been awarded contract for a foundry, 117 x 157, for the New Idea Spreader Co., Coldwater, Ohio. It will be of steel construction and work will begin at once.

The Royer Wheel Co., Aurora, Ind., will move its plant to Cincinnati if a suitable location can be obtained. The company employs 200 men and is seeking a plant with 60,000 sq. ft. of floor space. It is understood that in the event of a suitable building not being available, a new plant will be erected.

The G. A. Schacht Motor Truck Co., Eighth and Evans streets, Cincinnati, has filed plans for a new one-story building 66 x 208 ft., to cost about \$20,000.

The Minster Machine Co., Minster, Ohio, is having plans drawn for the erection of a one-story addition, 40 x 100 ft.

The Jeffrey Mfg. Co., North Fourth Street, Columbus, Ohio, manufacturer of transmission and conveying machinery, etc., is completing plans for a new two-story steel and concrete building, to cost about \$100,000.

Baltimore

BALTIMORE, Aug. 23.

The James J. Lacy Co., Block and Wills streets, Baltimore, manufacturer of iron and steel castings, etc., is planning for a one-story addition, 52 x 70 ft.

The Bethlehem Shipbuilding Corporation, Bethlehem, Pa., has submitted a low bid to the Navy Department, Washington, D. C., for the construction of six submarine boats, authorized by the Naval Appropriation Bill, at a price of \$3,990,000 each, delivery to commence in 30 months. The vessels will be 300 ft. long, with 27 ft. 7 in. beam. Other bidders were the Electric Boat Co. and the Lake Torpedo Boat Co.

The Cambridge Mechanical Toy Co., Cambridge, Md., recently incorporated with a capital of \$25,000, has leased a portion of the plant of the Woolford & Smith Co., High Street, and will equip the factory at once, production to begin early in September. Thomas J. Levy is president; Edgar Harrington, secretary and treasurer, and R. C. Hartleb, factory manager.

Lewis Williams and Samuel G. Phillips, Wilmington, Del., have acquired property at 619 Walnut Street for the establishment of new machine works and automobile repair plant.

The Kingsbury-Samuel Electric Co., 213 North Calvert Street, Baltimore, has acquired a three-story building at 530-32 North Calvert Street, on a site 26 x 110 ft., for a new plant for the manufacture of electrical products.

The Bureau of Yards and Docks, Washington, D. C., will receive bids up to Sept. 1 for the erection of a new mechanical building, shell building and filling house at the Government naval plant.

The Lummus Machinery Co., Spartanburg, S. C., manufacturer of cotton ginning machinery, will build a two-story branch plant, 50 x 160 ft., at Hayne, S. C. J. L. Lummus is president.

The Simmons Co., Kenosha, Wis., manufacturer of brass

and metal beds, springs, etc., has awarded a contract to E. L. Bass & Brothers, 709 Bainbridge Street, Richmond, Va., for a five-story plant, 88 x 175 ft., at Cary and Twenty-first streets, Richmond, to cost about \$500,000, including machinery.

Electric cranes, hoisting and conveying machinery will be installed on the new coal pier to be constructed by the Virginian Railway, Norfolk, Va. The new pier will occupy a site of about 300 acres and will have a capacity closely approximating 90 cars per hour. It is estimated to cost about \$1,000,000, with equipment. Plans are being prepared.

The Home Light & Power Co., Columbia, S. C., has been incorporated with a capital of \$20,000 by S. O. and M. G. Lindeman, to manufacture domestic lighting and heating appliances, electrical supplies, etc.

The Atlantic Coast Line Railroad, Wilmington, N. C., is planning for additions to its shops and yards at Waycross, Ga. The construction work is estimated to cost about \$150,000 and, in addition, about \$75,000 will be expended for equipment. J. E. Willoughby is chief engineer.

The initial plant of the Red Diamond Motors, Inc., Atlanta, Ga., will be used for assembling and the manufacture of automobile parts. The main building will be of reinforced concrete and steel and with equipment is estimated to cost about \$200,000. The H. D. Best Co., 175 Fifth Avenue, New York, has the contract for erection. The company was recently incorporated with a capital of \$5,000,000. W. H. Seabrooke is president.

Freight handling machinery, including cranes, conveying and loading equipment, etc., will be installed on the new municipal docks at Portsmouth, Va. An ordinance has been introduced at the City Council providing for an appropriation of \$3,500,000 for the project. Councilman C. D. Deans is active in the movement.

Buffalo

BUFFALO, Aug. 23.

The Parenti Motors, Inc., Mutual Life Building, Buffalo, has awarded contract to B. I. Crooker Co., Niagara Life Building, for its new plant, 100 x 320 ft., at Northumberland and Kensington avenues, to cost about \$100,000.

The Westcott Rule Co., Seneca Falls, N. Y., manufacturer of rules, levels, etc., has increased its capital from \$400,000 to \$700,000.

The Curtiss Aeroplane & Motor Corporation, Buffalo, has discontinued the manufacture of airplanes at its Churchill Street plant, and headquarters for such work, including parts production, have been established at Garden City, L. I. The company will continue the operation of its local machine shops for the present. M. C. Harrold is manager.

The Buffalo-Lafayette Motors, Inc., 1247 Main Street, Buffalo, has completed plans for a new two-story service and repair building, 49 x 83 ft., in the rear of its present works. Charles Kane is president.

The Athens Hardware Mfg. Co., Athens, N. Y., has increased its capital to \$50,000.

The J. L. Case Threshing Machine Co., Inc., 360 West Jefferson Street, Syracuse, N. Y., has awarded a contract to Edward R. Fenna, North Beech Street, for a two-story addition, 100 x 150 ft., at Jefferson and West streets.

The Batavia Clamp Co., 203 Center Street, Batavia, N. Y., manufacturer of clamps, jacks, etc., has filed plans for a one-story addition, 40 x 84 ft., to cost about \$15,000. C. W. Gardiner is president.

The Corrugated Bar Co., Mutual Life Building, Buffalo, manufacturer of steel reinforcing bars for concrete construction, etc., has awarded contract to Harding & Crea, White Building, for a one-story addition to its plant at Blaisdel, near Buffalo, 62 x 100 ft., to be equipped as a fabricating shop.

Officials of the Willys-Overland Co., Toledo, Ohio, and affiliated concerns, have secured a substantial interest in the United States Light & Heat Corporation, Niagara Falls, N. Y., manufacturer of storage batteries, electric lighting systems for railroad and other service, etc. John N. Willys has been elected chairman of the board; J. Allen Smith, president; E. H. Gold, vice-chairman of the board; C. L. Lane, vice-president and general manager; H. H. Knapp, treasurer, and H. H. Van Nest, vice-president and secretary.

The International Harvester Co., Auburn, N. Y., is planning for the erection of an addition to its local plant, to be used as a foundry for the production of gray iron castings.

The Jamestown Electrical Engineering Corporation,

Jamestown, N. Y., has been incorporated with a capital of \$50,000 by C. S. Cole, F. B. Smith and A. E. Westburgh, to manufacture electrical equipment and appliances.

The Jamestown Malleable Iron Products Co., 306 Fenton Building, Jamestown, N. Y., has taken bids for its new one-story plant at Falconer, 260 x 300 ft., for the manufacture of malleable iron castings. A. E. Schobek is secretary.

The Eames Motor Corporation, Lockport, N. Y., has been incorporated with a capital of \$75,000 by I. L. Fisk, W. C. Newcomb and D. D. Eames, to manufacture motor parts, etc.

Pittsburgh

PITTSBURGH, Aug. 23.

Although the past week has brought no new crane business, inquiries appear to be on the increase. The Pressed Steel Car Co., Pittsburgh, is reported to be considering the purchase of a gantry crane in connection with some improvements at its works in McKees Rocks, Pa. The Safe Cabinet Co., Marietta, Ohio, is taking bids on a 5-ton crane, and an overhead of similar capacity is sought by the Central Steel Co., Massillon, Ohio. Makers of steel mill equipment are not getting much domestic business at present, but have a fair amount of such business on their books and also a number of foreign orders. The out-of-stock demand for machine tools continues fairly brisk, with sales usually of individual pieces, but reaching a good aggregate. Prices of all tools sold with motors have been advanced in keeping with the recent advance in motors. Dealers still complain of slow deliveries by Cincinnati makers who apparently are feeling the effects of the recent labor troubles. Railroad transportation conditions are still against distant shipments and most sales made here are being delivered by trucks. A Pittsburgh dealer reports the sale of a complete line of wood-working and machine shop tools for shipment to South America by way of New York, but fears a cancellation before the shipment can be laid down in New York. This company some weeks ago made a sale of some tools for shipment to British Columbia by way of New York and the Panama Canal; the latest report about the consignment was that it still was in New York and 23 piers away from the one from which it will be shipped.

The Ruud Mfg. Co., Twenty-ninth and Smallman streets, Pittsburgh, has acquired property at 2936-38 Smallman Street, 43 x 120 ft., for about \$14,500, to be used for the erection of an addition, plans for which are being prepared. The new building will be equipped as a foundry and machine shop, for use in connection with the manufacture of water heaters, etc.

The National Tube Co., Pittsburgh, has acquired the former building of the Pittsburgh Brewing Co., on Fourth Street, McKeesport, Pa., on lot 60 x 144 ft., for a consideration of \$30,000. It will be used in connection with its plant.

The American Foundry & Construction Co., Second and Longworth streets, Pittsburgh, manufacturer of machinery and parts, has filed plans for the erection of a one-story steel addition to cost about \$12,000.

The Supreme Motors Corporation, Pittsburgh, manufacturer of automobiles, a Delaware corporation, has filed notice of change of name to the Supreme Automotive Corporation, at the same time increasing its capital from \$2,000,000 to \$4,000,000.

The Price Electric Co., Pittsburgh, manufacturer of electrical equipment, has acquired a three-story brick building on Penn Avenue, near Stanwix Street, on lot 40 x 113 ft., for about \$50,000. The building will be remodeled for general production.

The Wheeling Axle Co., Wheeling, W. Va., has been merged with the Spears Axle Co. of the same city, a division of the Standard Parts Co., Cleveland, specializing in the manufacture of automobile axles. Plans for expansion are under way at the first noted plant, to include the erection of a new foundry and the installation of considerable equipment.

The Dry Separator Co. of America, Inc., Welch, W. Va., has been incorporated with a capital of \$50,000 by W. J. O'Toole, J. E. Woods and A. Blunkett, to manufacture separating machinery and parts.

The Beans Foundry Co., Martins Ferry, Ohio, is having revised plans prepared for an addition, 50 x 200 ft., to cost about \$25,000. James H. Beans is general manager.

The Westinghouse Electric & Mfg. Co., East Pittsburgh, has begun the erection of a one-story building at North Trafford, Pa., 100 x 112 ft., for high-tension electric equipment production.

Milwaukee

MILWAUKEE, Aug. 23.

The local machine tool market is quiet and without feature. There is a fair inquiry and some scattering business in single tool requirements, but on the whole buyers are in a waiting attitude. Confidence is expressed by makers as well as dealers that after Sept. 1 the railroads will show considerably greater interest. Milling machine builders are engaged to a normal capacity on old orders and a fair amount of new business from miscellaneous sources, principally gas engine industries.

The C. H. & E. Mfg. Co., 384 Clinton Street, Milwaukee, manufacturer of gas engines, hoists and general contractors' equipment, is erecting a one-story brick and concrete machine shop extension, 48 x 140 ft., at Clinton and Mineral streets. Some additional tools are being purchased. The improvement will cost about \$45,000. Frank F. Hase is president and general manager.

The Helgerson Foundry Co., Green Bay, Wis., has increased its authorized capitalization from \$100,000 to \$150,000. It was incorporated about eight months ago to take over the Helgerson gray iron shop, which has been enlarged and equipped also for steel casting.

The Automatic Auto Jack Co., Milwaukee, has been incorporated with a capital stock of \$50,000 to manufacture automotive accessories and parts. The incorporators are represented by John J. Devos, H. M. Heyer and Wallace Reiss, attorney, 120 Wisconsin Street.

The Board of Education, Fond du Lac, Wis., is taking bids until Sept. 6 for the construction of a new high school designed by Childs & Smith, architects, Chicago, and estimated to cost \$750,000. It will be equipped for industrial arts instruction and general vocational training.

The Duplex Storage Battery Co., 537 Edison Street, Milwaukee, has purchased the plant of the former Beaver Dam Mfg. Co., Beaver Dam, Wis., and will remodel and retool it for the manufacture of storage batteries. The Duplex company is increasing its capital stock from \$60,000 to \$500,000. It has been in business since Jan. 1 and is transferring the operation because its present factory must be vacated soon, the site being condemned for bridge construction purposes. Officers of the company are: President and general manager, William Petschel; secretary-treasurer, M. A. Jacobs; directors, Herman Schickel and J. V. Zweck.

The J. J. Faust & Sons Co., Inc., Kaukauna, Wis., is a new corporation organized with \$25,000 capital to manufacture pumps, machinery, etc., and contract for drilling and boring wells, etc. The incorporators are Joseph J., Louis J. and Bernard N. Faust, all of Kaukauna.

The H. N. Davis Co., 412 Montgomery Building, Milwaukee, electroplater, has let the general contract to Rissen Brothers Co., 86 Michigan Street, local, for erecting a new plant, 60 x 115 ft., two stories and basement, on Thirty-second Street, near Meinecke Avenue. New machinery and equipment are being purchased.

The Stoelting Brothers Co., Kiel, Wis., manufacturer of hardware and dairy supplies, has increased its authorized capitalization from \$30,000 to \$100,000 to accommodate the growth of its business.

The Northern Specialty Co., Medford, Wis., has been chartered to manufacture medical and laboratory supplies, children's vehicles, etc. It is incorporated with \$100,000 capital stock by Dr. E. C. Nystrum, E. M. Wente and C. J. Wedry, all of Medford.

The Ford Motor Co., Detroit, upon the completion of a two-story addition, 130 x 350 ft., to the branch factory in Milwaukee at Prospect Avenue and Ivanhoe Place, will install equipment for assembling motors, in addition to the general assembling processes now carried on. Equipment for enameling fenders and small parts also will be installed. A. W. L. Gilpin is manager at Milwaukee.

The Menominee Motor Truck Co., formerly of Menominee, Mich., has completed its new factory at Clintonville, Wis., 120 x 250 ft., and is installing equipment. Production will begin Sept. 1. James A. Bell is vice-president and general manager.

The Vollrath Co., Sheboygan, Wis., manufacturer of enameled ware, will build an addition to its steam generating plant, designed by Brush & Philipp, architects, 405 Broadway, Milwaukee. The general contract has been let to Westinghouse, Church, Ker & Co., New York.

The Iron River Pulp & Paper Co., Iron River, Wis., has been incorporated with a capital stock of \$750,000 to develop a water power site and build a pulp and paper mill on the Iron River. The incorporators are Byron Ripley, T. F. Mackmiller and Roy H. Okerstrom.

The Columbia Rubber Mills Co., 176 Sixteenth Street, Milwaukee, is taking bids for a two-story factory, 70 x 110 ft., and a boiler house, 30 x 40 ft., at Sheboygan, Wis. The architects are Juul & Smith, Sheboygan. The investment will be about \$55,000.

The Commercial Refrigerating Machinery Co., Milwaukee, has been chartered in Wisconsin to manufacture refrigerating machinery and equipment. The capital stock consists of 5000 shares of preferred with a par value of \$100 each, and 2000 shares of non-par value common stock. The incorporators are Otto R. Lonstorf, W. E. Schroeder and M. F. Flynn, 1115 Maryland Avenue.

The Chain Belt Co., Milwaukee, is completing two buildings of its 1920 construction program at Thirty-ninth Avenue and Orchard Street. Thirty acres additional have been purchased for future extensions, making the site of the new works 59 acres. The structures nearing completion are a foundry with 15,400 sq. ft., and a core-room with an area of 13,000 sq. ft.

The Matteson Light & Power Co. of Matteson, post office Embarrass, Wis., has been incorporated with a capital stock of \$15,000 to generate and distribute light and power current. The incorporators are Frank Wait, Fred C. Klemp and Albert Klemp.

Indianapolis

INDIANAPOLIS, Aug. 23.

The Sandusky Portland Cement Co., Sandusky, Ohio, is planning for the installation of new equipment at its plant at Syracuse, Ind., to cost about \$150,000.

The Kokomo Steel & Wire Co., Kokomo, Ind., manufacturer of wire fencing, etc., is reported to be planning to rebuild its works, partially destroyed by fire, Aug. 1, with loss estimated at \$300,000, including machinery.

The Automobile & Truck Steering Gear Co., Lafayette, Ind., has been incorporated in Delaware with capital of \$100,000 by Elmer and Clarence Ruegemar and Forrest W. Jackson, Lafayette, to manufacture steering gears and transmissions for automobile service.

The Metals Refining Co., Hammond, Ind., is planning for the erection of new works. W. Wilke, Jr., is engineer.

The Haynes Automobile Co., Kokomo, Ind., has filed plans for a one and two-story addition, 75 x 200 ft., to cost about \$200,000. It will be equipped for the manufacture of automobile bodies.

The Fort Wayne Electric Works of the General Electric Co., Fort Wayne, Ind., has filed plans for a one-story building at Wall Street and Broadway, to cost about \$25,000.

The Logansport Radiator Equipment Co., Logansport, Ind., will defer the erection of the addition to its plant until early next year. The structure is estimated to cost about \$30,000.

Plans for the erection of a new power plant for works service are being prepared by the Republic Creosoting Co., Merchants' Bank Building, Indianapolis.

Prosser's Garage, Scottsburg, Ind., is having plans prepared for a one-story and basement machine shop and automobile repair works, 80 x 90 ft. C. Prosser is manager.

The Central South

ST. LOUIS, Aug. 23.

The Machinery & Supply Co. of Joplin, Mo., is planning for the erection of a new machine shop and warehouse to cost about \$150,000.

The Owensboro Ditcher & Grader Co., Owensboro, Ky., manufacturer of farm machinery, has been merged with the Simplex Farm Ditcher Co. of the same city. The capital of the first noted company has been increased from \$250,000 to \$500,000 for proposed expansion. W. A. Steele is president. The Simplex company is headed by W. H. Bannon, president, and H. B. Watkins, secretary-treasurer and general manager.

The Southern Textile & Machinery Co., 433 South Third Street, Paducah, Ky., is having plans prepared for a new one and two-story plant, 90 x 200 ft. W. P. Paxton is head.

The American Elevator & Machine Co., 500 East Main Street, Louisville, is planning for a two-story addition, 51 x 53 ft.

The Southwestern Tank Co., Pawhuska, Okla., has been incorporated with a capital of \$150,000 by John W. Tillman.

C. H. Loop and O. P. Fitzhugh to manufacture tanks, boilers, etc.

The Corn Products Refining Co., 17 Battery Place, New York, has acquired 75 acres at Kansas City, Mo., for the erection of a plant, estimated to cost in excess of \$5,000,000, including machinery. Plans are being prepared for an initial erection of seven buildings, to employ about 1000. It is planned to begin construction late in September and have some departments ready for operation in 1921.

The Consolidated Fuel Co., Blackley, Ky., is planning the erection of a new coal tipple at its local properties.

The Common Council, Collinsville, Okla., is planning for the erection of a new hydroelectric light and power plant on the Caney River for municipal service, to cost about \$100,000.

The Missouri, Kansas & Texas Railroad, St. Louis, is planning for additions and improvements at Oklahoma City, Okla. The work will include new construction and repair shops, engine house, mechanical coal loading plant, etc., and is estimated to cost about \$650,000.

The Kentucky Steel Products Co., Lexington, Ky., recently incorporated with a capital of \$250,000, has acquired a two-story building, 50 x 100 ft., for the manufacture of wire nails and other wire and steel products. It is proposed to build a one-story addition and commence the installation of machinery at an early date. A large portion of the equipment will be electrically operated. John R. Humphrey is president and John L. Buckley, treasurer.

The Signal Mountain Portland Cement Co., Chattanooga, Tenn., recently organized with a capital of \$6,000,000, has acquired 500 acres at Signal Mountain, about five miles from Chattanooga, for its proposed works. Plans are under way for the new mills, which will be equipped for an initial production of about 3000 bbl. per day, with facilities for increasing the output to 5000 bbl. George P. Dieckmann, manager of the Gulf States Portland Cement Co., Demopolis, Ala., will be in charge. C. E. James, Chattanooga, is prominent in the company.

The Michaels Art Bronze Co., 230 East Scott Street, Covington, Ky., is considering the erection of a three-story addition, 37 x 45 ft. F. L. Michaels is president.

The Standard Sanitary Mfg. Co., 319 West Main Street, Louisville, has awarded a contract to the National Concrete Construction Co., Board of Trade Building, for a one-story addition, 75 x 150 ft. W. A. Wunderlich is manager.

The De Witt Machine Shop Co., Inc., De Witt, Ark., recently incorporated with a capital of \$50,000, is planning to erect a new machine shop.

The Myers Stave & Mfg. Co., J. R. Myers, manager, Piggott, Ark., will equip a power plant and a factory, the former requiring about \$40,000 worth of boilers and engines.

The Albuquerque Gas & Electric Co., Albuquerque, N. Mex., will install boilers and make other improvements in its power plant. Arthur Prager is local manager.

The Pacific Northwest

SEATTLE, AUG. 17.

Business in general is comparatively quiet, with buying light. One large manufacturer of industrial trucks, although operating at normal capacity, is storing his product until the demand improves.

The lumber market shows the effect of buyers seeking to get under cover ahead of the freight rate advance, and purchases have been exceedingly heavy the past week. Orders exceed production five per cent and cars for transportation continue very scarce.

The Eastern Railway & Lumber Co., Centralia, Wash., is making extensive improvements to its plant. Several buildings will be erected, to be equipped with new machinery.

Joseph Paquet, 12 East Twelfth Street, Portland, plans the erection of a two-story brick factory, 90 x 100 ft., at a cost of \$18,000 to manufacture wooden novelties.

The H. C. Jorgensen Lumber Mill, Chehalis, Wash., was completely destroyed by fire recently, with loss of more than \$20,000. It had a daily capacity of 20,000 ft. and will be rebuilt.

The Jones Mfg. Co., Walla Walla, Wash., has completed plans for a new plant to be built at a cost of \$1,000,000. The initial annual output will be 200 threshing machines, as well as a machine and foundry business.

The South Shore Lumber Co., Vancouver, B. C., will make improvements to its plant, including the installation of new boilers and other equipment.

Charles Hall and associates, Klamath Falls, Ore., will erect a new sawmill near Lakeview, Ore., with an annual capacity of 50,000,000 ft. A 16-mile railroad will be built.

The plant of the Aberdeen Packing Company, Aberdeen, Wash., was destroyed by fire recently, with a loss of \$55,000. It will be rebuilt.

The lumber plant of the Grays Harbor Commercial Co., Cosmopolis, Wash., was partially destroyed by fire recently, with loss of \$150,000. Seven kilns were destroyed and considerable other equipment. The company will immediately rebuild.

The Mercer Ironing Machine Co., Seattle, will erect a new two-story plant in Seattle at a cost of \$25,000.

The Pacific Panel & Mfg. Company, Tacoma, Wash., has been incorporated for \$300,000 by A. J. Ritchie, J. B. Kaiser and W. O. Parker. A plant for the manufacture of panel and veneer finishings will be established in a structure 150 x 335 ft., two stories. About \$125,000 will be expended in equipment.

The Gulf States

BIRMINGHAM, Aug. 23.

The Standard Rubber Co., New Orleans, La., recently organized with a capital of \$5,000,000 to manufacture automobile tires, has plans under way for the erection of the initial units. It is expected to have the first unit ready for service early in January, with output of about 1000 tires per day. Interested in the company are L. C. St. Germain, New Orleans; J. W. Olivier, Arnaudville, La., and W. A. Brownlee, manager of the Big Pine Lumber Co., Colfax, La.

The Southland Metal Co., Lake Charles, La., recently incorporated with a capital of \$50,000, has secured a building providing about 7000 sq. ft. of space for the manufacture of steel tanks, boilers and kindred equipment. Dallas Gross is president and Adolph Bischoff, vice-president and manager.

The Fin-Nor Machine Co., Miami, Fla., has been incorporated with a capital of \$25,000 by John L. and Henry R. North, and Thomas B. Finlay, to manufacture machinery and parts.

The Kelly Drydock & Shipbuilding Co., Commerce Street, Mobile, Ala., is planning for the erection of a new machine shop, 50 x 100 ft. A new power plant will also be erected, and a number of auxiliary buildings. The work is estimated to cost close to \$150,000. E. L. Whitney is president.

The Wichita Falls, Ranger & Fort Worth Railroad Co., Ranger, Tex., is planning to build new locomotive and car repair shops at Dublin, Tex. M. F. McFarland is chief engineer.

The Abilene Gas & Power Co., Abilene, Tex., is planning for the erection of a new electric power plant to be operated in conjunction with an ice-manufacturing plant. The total cost of the project is estimated at \$1,000,000, including equipment.

The Alabama Power Co., Birmingham, Ala., will erect a new hydroelectric power plant at Judkins Riffle on the Coosa River, estimated to cost close to \$10,000,000, including machinery, steel transmission towers and other features. A new unit will be erected at the power station at Lock No. 12, to provide about 20,000 hp. additional generating capacity. This work is estimated to cost about \$500,000.

The Northern Texas Traction Co., Fort Worth, Tex., is planning the erection of a new reinforced-concrete machine and repair shop, to cost about \$50,000.

The American Automotive School, 101 North Haskell Avenue, Dallas, Tex., is planning for the erection of a new shop building, 75 x 100 ft., to be equipped for instruction in automobile parts manufacture, repair work, etc., estimated to cost about \$10,000. Arthur Stevenson is manager.

A garage to cost about \$75,000 will be built by William Goldenburg, Daytona, Fla.

The American Enamel Iron Products Co., Chicago, is reported planning to build works for the manufacture of bathtubs, etc., at Birmingham.

The Iron City Pipe & Foundry Co., Birmingham, will build an addition to its foundry to double its output. With equipment it is estimated to cost about \$250,000.

The Beaumont Iron Works, Beaumont, Tex., will erect a reinforced concrete foundry and pattern shop. An electric crane will be installed.

The saw mill of the Rock Creek Lumber Co., Trinity, Tex., recently destroyed by fire, will be rebuilt at a cost of \$175,000.

A new light and ice plant will be erected at Memphis, Tex., to take place of the one destroyed by fire.

The Corsicana Grader & Machine Co., recently organized at Corsicana, Tex., with a capital stock of \$100,000, has begun construction of its plant.

The Standard Ice Co., Baton Rouge, La., will equip a 3000-ton cold storage plant and is taking bids for the machinery.

California

LOS ANGELES, AUG. 17.

The Stockton Tractor Co., Stockton, Cal., is selecting a site for the erection of its new plant for the manufacture of farm tractors and parts. Plans are being prepared by C. C. Cuff, architect, Ochsner Building, Sacramento, Cal. The initial unit is estimated to cost about \$40,000. H. E. Mayers is general manager.

The Universal Sheet Metal Works, 2809 West Pico Street, Los Angeles, has filed notice of organization to manufacture metal products. V. H. Meadow, 4420 Lockwood Street, heads the company.

The Pacific Wire Rope Co., Fifteenth and Alameda streets, Los Angeles, has had plans prepared for a one-story addition, 40 x 125 feet.

John O'Connor, 383 Elsie Street, San Francisco, has filed plans for a new one-story brick machine shop on North Natoma Street, near Mary Street.

The Western S. & S. Shock Absorber Co., Los Angeles, has been incorporated with a capital of \$50,000 by E. W. Carroll and C. H. Jonas, Los Angeles; and LeRoy Anderson, Prescott, Ariz., to manufacture shock absorbers for automobile service.

C. E. Treat, Santa Ana, Cal., is organizing a company with a capital of \$150,000 for the establishment of a plant to manufacture electric plugs and kindred specialties to cost about \$40,000. A site is being selected at Los Angeles.

The Chevrolet Motor Co., Los Angeles, has leased a new building to be erected on Seventh Street, near Alameda Street, 100 x 150 ft., for the establishment of a new service and repair works.

The Main Auto Top Co., 2514 South Main Street, Los Angeles, has filed notice of organization to manufacture automobile tops and other motor equipment. Isidor Segal heads the company.

R. J. Shoemaker and James Donovan, Los Angeles, have organized a company to manufacture a rivet heater and other iron and steel products. Negotiations are under way with the Chamber of Commerce, Long Beach, Cal., for a suitable site for the proposed plant.

The Parker Machine Works, Riverside, Cal., has filed plans for its new one-story machine shop at Twelfth and Pachappa streets.

The Gove Motor Co., Reno, Nev., has completed plans for a new one-story automobile works, 90 x 220 ft., to cost about \$200,000, including equipment. It has secured about five acres on East Fourth Street and construction will begin at once. The plant will be used for the manufacture of parts, and other motor car equipment. H. E. Gove is president.

Considerable mechanical and electrical equipment will be installed in the new four-story ice and cold storage plant, 144 x 150 ft., to be erected by the Consumers' Ice & Cold Storage Co., D Street, near Eighth Street, Sacramento, Cal. It is estimated to cost about \$250,000, including machinery.

The Moore Shipbuilding Co., Oakland, Cal., has filed plans for a three-story, reinforced-concrete machine and construction shop to cost about \$105,000. It has been awarded contract for a 10,000-ton tanker for the Vacuum Oil Co.

The Union Construction Co., Oakland, Cal., has contracts to build three 8400-ton oil tank ships for the Anglo-Saxon Petroleum Co. The Southwestern Shipyards Co., Los Angeles, has been awarded a similar contract.

Fire, Aug. 14, partially destroyed the Steiger & Kerr, stove foundry, 2021 Folsom Street, San Francisco, with an estimated loss of \$25,000.

A one story concrete machine shop will be constructed on Third near Clay Street, Oakland, Cal., for Joseph R. Karel at a cost of \$13,000.

Landes & Co., dealers in modern machinery, Second West and South Temple, Salt Lake City, Utah, are adding a machine-tool department, the more fully to utilize their selling organization, and would like to get in touch with a number of machine tool manufacturers and also manufacturers of small tools for machine shops.

Canada

TORONTO, AUG. 23.

The vacation season has caused a temporary depression throughout the machine-tool trade. Some dealers, however, are finding a fair activity in small tools and in many cases single machines are in demand. No large lists have been issued, although the Canadian National Railways are placing

orders from time to time for equipment for their various shops. Prospects for early fall and winter business are bright. There are at present under construction a number of foundries and manufacturing plants, which, with contemplated works are looked to as a source of demand for machinery and tools. Canadian railroad shops are also expected to enter the market for considerable equipment. There appears to be a growing tendency on the part of manufacturers generally to pay more attention to labor saving machinery and equipment which will speed up production, and dealers handling this class of material have little difficulty in getting prospective buyers to listen to their arguments. The closing down of some Canadian automobile industries, together with curtailed operations at other plants, has taken away a number of customers who were large buyers the past year, but dealers have been expecting something like this to happen and were not taken altogether by surprise. They have been scouting around for other markets in the past three or four months and are now very optimistic regarding the future. Second-hand and rebuilt machinery and tools are in fairly good demand, but as the greater part of this class of equipment which was thrown on the market at the close of the war has been disposed of, some dealers are turning to the United States, where it is said large quantities of second-hand-tools are to be had. Deliveries have shown a decided improvement and some dealers have been successful in placing certain lines of machinery in stock.

George Royal, superintendent Imperial Steel & Wire Co., Collingwood, Ont., will receive bids for the erection of a plant to cost \$150,000. Philip C. Palin, Hurontario Street, is the architect.

The Taylor Campbell Electric Co., Adelaide Street, London, Ont., is receiving bids for rebuilding its factory which was recently destroyed. J. M. Moore, 425 Richmond Street, is the architect.

H. K. Ferguson & Co., Temple Building, has the general contract for the erection of a blacksmith shop to cost \$45,000 for the Cockshutt Plow Co., 65 Dalhousie Street, Brantford, Ont.

The Canadian General Electric Co., 212 King Street West, Toronto, has let contracts in connection with erection of manufacturing plant to cost \$250,000.

The National Fireproofing Co., Ltd., Dominion Bank Building, Toronto, is in the market for 3 V-shaped side dump steel cars, 2-yd. capacity, 36-in. gage, diameter of wheels, 18-in., height from rail to top of car approximately 62-in., width of car approximately 72 in., weight, 1800 lb. Either new or second hand cars will be considered.

The Lovat Brick Co., Lovat, Ont., will rebuild and re-equip its plant which was recently destroyed by fire.

The Brunner Mond Co., Amherstburg, Ont., is building an addition to its plant and will install equipment to increase its capacity 50 per cent.

The Joseph Stokes Rubber Co., Ltd., Trenton, N. J., has purchased three acres adjoining the Grand Trunk Railroad at Welland, Ont., and will at once commence the erection of a factory to manufacture hard rubber goods, plates and cells for batteries, etc. The first unit will be 65 x 160 ft. with separate power house and office. It is expected to begin operations in December.

The Dillon Crucible Alloys, Ltd., Welland, Ont., has increased its capital stock from \$500,000 of preferred stock to 5000 shares of no nominal or par value stock to \$1,050,000 and contemplates the erection of an addition. The name of the company will also be changed to the Canadian Atlas Crucible Steel Co., Ltd.

The Canadian Edison Appliance Co., Ltd., Toronto, has been incorporated with a capital stock of \$1,000,000 by William A. J. Case, 94 Leuty Avenue; James B. Taylor, 901 Dominion Bank Building; George E. Atwood and others to manufacture electric specialties, machinery, tools, etc.

The Gem Safety Razor Corporation, Ltd., Toronto, has been incorporated with a capital stock of \$50,000 by Arthur A. Tritsch, 171 A, Keele Street; William H. Wallbridge, 19 Melinda Street; William H. J. Tubb and others, to manufacture safety razors, cutlery, etc.

The Steel Co. of Canada, Hamilton, Ont., proposes to erect a wire fence plant to cost \$250,000.

R. Howie, Ltd., Toronto, has been incorporated with a capital stock of \$50,000 by Frederick B. Edmunds, 232 Dundas Street West; Robert Howie, Alfred S. C. Oakley and others, to manufacture trucks, motors, accessories, etc.

Finch & Anderson, Ltd., Toronto, has been incorporated with a capital stock of \$200,000 by Frederick G. Finch, 48 Wilson Avenue; Delbert L. Constable, 24 King Street West; Frank G. Anderson and others to manufacture automobiles, motors, engines, etc.

NEW TRADE PUBLICATIONS

Screw Cutting Tools and Machines.—Geometric Tool Co., Westville Station, New Haven, Conn. Catalog, 140 pages, 5 $\frac{1}{4}$ x 7 $\frac{1}{2}$ in. Illustrations and descriptions of Geometric screw cutting tools and machines, including self-opening adjustable die heads, solid adjustable die heads, adjustable collapsing taps, threading machines, and a chaser grinder. The die heads and collapsing taps are made in a number of styles and are adapted for use on the turrets of practically all makes of hand and automatic screw machines and turret lathes. A number of useful tables of standard threads are included.

Fuel Oil Burners.—John Foerst & Sons, 80 West Twenty-second Street, Bayonne, N. J. Catalog, 40 pages, 5 x 8 in. Deals with fuel oil burners of conical and fantail types for marine, stationary and locomotive boilers, ovens, furnaces, stills, kilns, dryers, evaporators, etc. The burners are illustrated, and line drawings show various applications.

Grinding Wheels.—Norton Co., Worcester, Mass. Booklet. Deals with Norton grinding wheels on the Pratt and Whitney surface grinding machines.

Gages.—Societe Genevoise D'Instruments De Physique, Geneva, Switzerland, represented by the Golden Co., 405 Lexington Avenue, New York. Catalog 261. Illustrates and describes limit and standard plain gages including limit plug gages, limit plate gages, adjustable limit snap gages, adjustable reference snap gages, reference disks, standard plug and ring gages, and standard plate gages.

Electric Furnace Steels.—United Alloy Steel Corporation, Canton, Ohio. Catalog, 31 pages, 7 x 10 in. Refers to electric furnace alloy and special carbon steels. The physical characteristics of the different steels are outlined and the special fields of usefulness are indicated. Charts, and tables of bar steel weights, metric conversion table, and other tables are included.

Belt Lacing.—Clipper Belt Lacer Co., Grand Rapids, Mich. Illustrates and describes the company's belt lacing and a belt lacer. The belt lacing consists of wire hooks which zig-zag through the belt, long and short ends alternating. The lacing is smooth and flush with the belt on both sides. A history of the development of the lacing is given.

Cylinder Reaming Sets.—Wetmore Reamer Co., Milwaukee. Bulletin 14. Describes a reamer set consisting of a roughing reamer, semi-finishing reamer, and a floating finishing reamer, particularly suited to the reaming of engine cylinders. A shell reamer which is a modification of the standard reamer, adaptable for both line reaming and pilot reaming, is also described.

Rock Drills.—Chicago Pneumatic Tool Co., 6 East Forty-fourth Street, New York. Bulletin 504. Devoted to Slogger rock drills, built to operate by steam or compressed air. The rock drill is a piston machine of the reciprocating type, designed for use with solid steel only, and is used as a mounted machine, either on tripod or column. Detail and assembled views are shown.

Tool Steel.—Hammond Steel Co., Syracuse, N. Y. Describes the Status brand of tool steel. This steel, it is stated, will not warp nor shrink when hardening. Illustrations show a punching die, an intricate embossing die, and tools made from this steel.

Chemical Stoneware.—Maurice A. Knight, Akron, Ohio. Catalog, 32 pages, 9 x 12 $\frac{1}{4}$ in. Portrays numerous examples of acid-proof chemical stoneware apparatus, intended to show the possibilities of design.

Refractory Cement.—Quigley Furnace Specialties Co., 26 Cortlandt St., New York. Catalog. Shows applications of Hytemite in gas plants. This is a refractory plastic material for bonding fire brick and for kindred uses. A number of views show emergency applications of the cement.

CO₂ Equipment.—Uehling Instrument Co., 71 Broadway, New York. Bulletin 111. Illustrates and describes Uehling CO₂ equipment, style U, in single and multiple units. The equipment includes the CO₂ meter in which the flue gas is analyzed, a recording gage, and an auxiliary boiler front indicator.

Sheet Metal Stamping.—Crosby Co., Buffalo. Catalog. Illustrations of sheet metal stampings produced by this company for automobiles, motor trucks, aeroplanes, railroad cars, electrical devices, etc.

Battery Charging Equipment.—Cutler-Hammer Mfg. Co., Milwaukee. Publication 830, 24 pages, 8 $\frac{1}{2}$ x 11 in. Illustrates and describes battery charging equipment for electric street vehicles, industrial trucks, battery locomotives, and other secondary battery equipment.

Drilling Machines.—Avey Drilling Machine Co., Cincinnati. A series of bulletins describing and illustrating the company's line of drilling machines. These machines are ball bearing and are built in bench and column types for the various fields of sensitive drilling.

Industrial Engineering.—M. H. Avram & Co., 360 Madison Avenue, New York. Booklet with the title "Science in Industry." Discusses the province of industrial engineering and presents the company's facilities for advising and investigating production and organization, and making the analysis and determining of the value of new projects.

Steam Turbines.—Kerr Turbine Co., Wellsville, N. Y. Two bulletins. Illustrations and descriptions of a line of turbines of the Curtis, Rateau and combination Curtis-Rateau types. One booklet covers land equipment and the other marine equipment. Views of a number of turbine installations are shown.

Industrial Heating Apparatus.—Westinghouse Electric & Mfg. Co., East Pittsburgh. Catalog 9-A-2. Describes industrial heating apparatus, including electric outdoor service footwarmers, water heating devices, immersion heaters, electrically heated hot tables, industrial heating plates, dry type glue pots and soldering pots.

Welding and Cutting Equipment.—Imperial Brass Mfg. Co., 1200 West Harrison Street, Chicago. Pamphlet. Illustrates and describes oxy-acetylene welding and cutting equipment.

Acetylene Generators.—Imperial Brass Mfg. Co., 1200 West Harrison Street, Chicago. Circular 172. Illustrates and describes an automatic acetylene generator, of the medium pressure, carbide to water type. It produces pure acetylene gas for welding, cutting and lead burning by the oxy-acetylene process, and is made in 15, 25, 50 and 100 lb. sizes. It is mounted on a portable truck when required.

Vertical Boring and Turning Mill.—Gisholt Machine Co., Madison, Wis. Pamphlet. Illustrates and describes the Gisholt 36-in. vertical boring and turning mill.

Locomotive and Power Plant Specialties.—Ashton Valve Co., 161 First Street, Boston. Catalog, 176 pages, 6 x 9 in. Devoted to an extensive line of pop safety and relief valves, pressure and vacuum gages, and kindred locomotive and power plant specialties, including engine room and marine clocks, engine registers, rectangular counters, air brake gages, vacuum gages, testing pumps, bubbling drinking fountains, etc.

Cast-Iron Flanged Fittings.—Lynchburg Foundry Co., Lynchburg, Va. Catalog, 64 pages, 4 x 7 in. Lists and illustrates a line of cast-iron bell and spigot pipe and fittings; cast-iron flanged pipe and fittings, and municipal castings.

Respirators.—Walter Soderling, Inc., 347 West Broadway, New York. Pamphlet. Illustrates and describes a respirator for use in dusty conditions, a gas mask for use in ammonia, smoke and gas, and an all-purpose industrial goggle.

Standardized Bushings.—Wright-Fisher Bushing Corporation, Detroit. Loose-leaf pages, listing and illustrating standardized drilling and reaming bushings made of tool steel and exact to 0.0003 in.

Adjustable Speed Motors.—General Electric Co., Schenectady. Bulletin 41021A. Describes the company's latest design of RF, Form A, direct current, adjustable speed motors rated from 2-3 to 50 intermittent horsepower. A compensating winding, it is stated, practically eliminates flux distortion losses. The motor is explained as particularly suitable for reversing planer operation, pipe threading, tapping, or for driving any machine repeating its cycle of operation.

Injector Sand Blast.—J. M. Betton, 59 Pearl Street, N. Y. Booklet with the title "Sandcraft." Describes the injector sand blast apparatus and its operation.

Power Hammers.—United Hammer Co., Boston. Pamphlet. Illustrates and explains details of two of the types of power hammers built by this company and gives tables of sizes and details of belt-driven and motor-driven hammers.

Weather-Strip.—Abbey Co., Chicago. Folder. Illustrates and describes cloth lined metal weather-strip.

Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

Iron and Soft Steel Bars and Shapes

Bars:	Per Lb.
Refined iron, base price	5.25c.
Swedish bars, base price	20.00c.

Soft Steel:

3/4 to 1 1/8 in., round and square	3.52c. to 5.25c.
1 to 6 in. x 3/8 to 1 in.	3.52c. to 5.25c.
1 to 6 in. x 1/4 to 5/16	3.62c. to 5.25c.
Rods—3/8 and 11/16	3.57c. to 5.05c.
Bands—1 1/2 to 6 by 3/16 to No. 8	4.22c. to 6.50c.
Hoops	5.57c. to 6.57c.

Shapes:

Beams and channels—3 to 15 in.	3.47c. to 5.25c.
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Angles:

3 in. x 1/4 in. and larger	3.47c. to 5.25c.
3 in. x 3/16 in. and 1/8 in.	3.72c. to 5.60c.
1 1/2 to 2 1/2 in. x 1/8 in.	3.52c. to 5.90c.
1 1/2 to 2 3/4 in. x 3/16 in. and thicker	3.47c. to 5.85c.
1 to 1 1/4 in. x 3/16 in.	3.52c. to 5.90c.
1 to 1 1/4 in. x 1/8 in.	3.57c. to 5.95c.
7/8 x 7/8 x 1/8 in.	3.62c. to 6.00c.
3/4 x 1/8 in.	3.67c. to 6.05c.
5/8 x 1/8 in.	4.07c. to 6.85c.
1/2 x 3/32 in.	5.17c. to 7.55c.

Tees:

1 x 1/8 in.	3.87c. to 6.25c.
1 1/4 in. x 1 1/4 x 3/16 in.	3.77c. to 6.15c.
1 1/2 to 2 1/2 x 3/16 in. and thicker	3.57c. to 5.95c.
3 in. and larger	3.52c. to 5.30c.

Merchant Steel

Per Lb.	
Tire, 1 1/2 x 1/2 in. and larger	
(Smooth finish, 1 to 2 1/2 x 1/4 in. and larger)	5.00c. to 5.25c.
Toe calk, 1/2 x 3/8 in. and larger	5.50c.
Cold-rolled strip (soft and quarter hard)	6.00c.
Open-hearth spring steel	12c. to 14c.
Shafting and Screw Stock:	7.00c. to 10.00c.
Rounds	6.25c. to 7.00c.
Squares, flats and hex	6.75c. to 7.50c.
Standard cast steel, base price	15.00c.
Best cast steel	20.00c. to 24.00c.
Extra best cast steel	25.00c. to 30.00c.

Tank Plates—Steel

Per Lb.	
1/4 in. and heavier	3.67c. to 5.50c.

Sheets

Blue Annealed	Per Lb.
No. 10	7.12c. to 8.30c.
No. 12	7.15c. to 8.35c.
No. 14	7.22c. to 8.40c.
No. 16	7.32c. to 8.50c.

Box Annealed—Black

Soft Steel	Wood's Refined	Per Lb.
C.R., One Pass		
Nos. 18 to 20	8.30c. to 9.90c.	
Nos. 22 and 24	8.35c. to 9.85c.	10.80c.
No. 26	8.40c. to 9.90c.	10.85c.
No. 28	8.50c. to 10.00c.	11.00c.
No. 30	8.60c. to 10.10c.	
No. 28, 36 in. wide		10.25c. to 12.50c.
		20c. higher.

Galvanized

Per Lb.	
No. 14	8.75c. to 11.00c.
No. 16	9.00c. to 11.25c.
Nos. 18 and 20	9.15c. to 11.40c.
Nos. 22 and 24	9.30c. to 11.55c.
Nos. 26	9.45c. to 11.70c.
No. 27	9.60c. to 11.85c.
No. 28	9.75c. to 12.00c.
No. 30	10.25c. to 12.50c.
No. 28, 36 in. wide	20c. higher.

Pipe

Standard—Steel	Wrought Iron
Blk. Galv.	Blk. Galv.
1/2 in. Butt... —36 —19	3/4-1 1/2 in. Butt. — 5 +15
3/4-3 in. Butt. —40 —24	2 in. Lap.... + 1 +19
3 1/2-6 in. Lap. —35 —20	2 1/2-6 in. Lap. — 1 +15
7-12 in. Lap.. —25 — 8	7-12 in. Lap.. +10 +28

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general headings of "Iron and Steel Markets" and "Metal Markets."

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright basic	8.00c.
Annealed soft	8.00c.
Galvanized annealed	8.50c.
Coppered basic	8.50c.
Tinned soft Bessemer	10.00c.

*Regular extras for lighter gages.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	28 1/4 c. to 29 1/2 c.
High brass wire	28 1/4 c. to 29 1/2 c.
Brass rod	26 3/4 c. to 29 c.
Brass Tube	43 1/4 c. to 45 1/2 c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 29 1/2 c. per lb. base. Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

Tin Plates

Bright Tin	Coke—14x20
Grade	Primes Wasters
"AAA"	80 lb... 11.80 11.55
Charcoal	90 lb... 11.90 11.65
14x20	100 lb... 12.00 11.75
IC... \$16.50	IC... 12.25 12.00
IX... 18.75	IX... 13.25 13.00
IXX... 20.50	IXX... 14.25 14.00
IXXX... 22.25	IXXX... 15.25 15.00
IXXXX... 23.75	IXXXX... 16.25 16.00

Terne Plates

8-lb. Coating 14 x 20	
100 lb.	\$9.35
IC	9.50
IX	10.50
Fire door stock	12.75

Tin

Straits pig	53c.
Bar	.60c. to 62c.
Lake ingot	20c.
Electrolytic	19 1/2 c.
Casting	19 1/2 c.

Spelter and Sheet Zinc

Western spelter	10c. to 11c.
Sheet zinc, No. 9 base, casks	14 1/2 c. open 15c.

Lead and Solder*

American pig lead	10 1/2 c. to 11c.
Bar lead	12c. to 13c.
Solder 1/2 and 1/2 guaranteed	38c.
No. 1 solder	35c.
Refined solder	31c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	.90c.
Commercial grade, per lb.	.50c.

Antimony

Asiatic	9 to 10c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.... 35c. to 38c.

Old Metals

Prices are unchanged, orders are scarce, and business is very quiet. Dealers' buying prices are as follows:

	Cents per lb.
Copper, heavy and crucible	15.75
Copper, heavy and wire	14.75
Copper, light and bottoms	13.00
Brass, heavy	9.75
Brass, light	7.25
Heavy machine composition	15.00
No. 1 yellow brass turnings	9.50
No. 1 red brass or composition turnings	12.25
Lead, heavy	7.50
Lead, tea	5.00
Zinc	5.25

